Hello Baby, Bye-Bye Love?

Chances and Challenges During Transition to Parenthood

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ABSTRACT

The birth of a child is often a joyous but also stressful event for couples due to the changes that accompany parenthood. Thus, couples becoming parents often report a sudden decline in relationship satisfaction. Relationship education (RE) programs have been shown considerable effects by provide key knowledge and skills to better manage the transition. Changes in couple communication are often presumed to mediate the effects of couple relationship education (RE), but findings are mixed. Aiming to expand our knowledge about couples becoming parents and the effects of RE, the current thesis investigates time effects of the transition to parenthood on stress, relationship skills and relationship satisfaction. In addition, the mediating role of communication regarding RE effects of an established (*Couple CARE for parents*, CCP) and a new (*Couple Care and Coping Program*, CCC-P) RE program are examined. Based on the empirical contributions, the following conclusions are drawn: (1) Adverse changes in relationships happen already before birth, (2) CCC-P can buffer some of these effects before birth, (3) The transition to parenthood does not only affect individual stress negatively, but also different relationship skills and relationship satisfaction, (4) CCP causes changes in communication but these changes do not predict the trajectory of couple's satisfaction. The current work provides a basis for future investigations and is of practical significance for couples.

ZUSAMMENFASSUNG

Die Geburt eines Kindes ist für viele Paare ein freudiges Ereignis, das jedoch mit einigen anspruchsvollen Veränderungen einhergeht; eine steile Abnahme der Partnerschaftszufriedenheit ist oft die Folge. In Paar-Präventionsprogrammen (PP) erhalten Paare wichtige Informationen zum Thema Partnerschaft und festigen Partnerschaftskompetenzen um die Übergangsphase zu meistern. Die durch PP veränderte Kommunikation wird oft als Mediator für die positiven Befunde von PP genannt; Befunde dazu sind aber widersprüchlich. Ziel dieser Dissertation ist es, die Wirkung des Übergangs zur Elternschaft auf Stress, Paarkompetenzen und Beziehungszufriedenheit zu untersuchen. Weiter wird die mediierende Rolle der Kommunikation in Bezug auf ein bestehendes (*Couple CARE for parents*, CCP) und ein neuartiges (*Couple Care and Coping Program*, CCC-P) PP untersucht. Die Resultate lassen sich wie folgt zusammenfassen: (1) Bereits die Schwangerschaft führt zu ungünstigen Veränderungen in der Partnerschaft, (2) CCC-P kann einige dieser Veränderungen in der Schwangerschaft abfedern, (3) der Übergang zur Elternschaft wirkt sich negativ auf Stress, Partnerschaftskompetenzen und die Beziehungszufriedenheit aus, (4) CCP bewirkt positive Veränderungen in der Kommunikation, doch sagt diese Veränderung nicht die Beziehungszufriedenheit vorher. Diese Arbeit bietet eine vielversprechende Basis für weitere Forschung und um Präventionsprogramme weiter an die Bedürfnisse werdender Eltern anpassen zu können.

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Preface

The transition to parenthood is demanding for many couples becoming parents. The present thesis contributes to this scientific debate by investigating time effects of the transition to parenthood and effects of relationship education (RE) on stress, relationship skills (i.e., dyadic coping, relationship self-regulation and communication) and relationship satisfaction.

As a starting point, Chapter 1 of this thesis illustrates typical changes happening across the transition to parenthood and their association with relationship satisfaction. Chapter 2 provides some theoretical background about the transition to parenthood, highlighting the process of how the transition to parenthood can result in low relationship satisfaction. Chapter 3 elucidates different relationship skills and their associations with relationship functioning. Chapter 4 familiarizes the reader with the concept effects of RE and its theoretical framework.

The empirical part of this thesis starts out by outlining own research objectives (Chapter 5). The three empirical studies that were conducted for this dissertation to investigate effects of the transition to parenthood on couples and effects of RE for couples becoming parents are then presented in Chapters 6 to 8. Findings are summarized and discussed with regard to limitations and to future research in Chapters 9 and 10. Finally, practical implications are presented in Chapter 11.

INTRODUCTION

1. Transition to Parenthood

Becoming parents is often described as a highlight of romantic relationships and as an event of pride, joy and happiness (Gottman & Notarius, 2000). Nevertheless, many parents find that parenthood can be stressful and highly demanding (e.g., Doss, Cicila, Hsueh, Morrison, & Carhart, 2014; Halford, Petch, & Creedy, 2015). A meta-analysis of longitudinal studies of couples becoming parents found mean relationship satisfaction shows a medium to large effect size decline across the first two years after the birth of the couple's first child (Mitnick, Heyman, & Smith Slep, 2009). This decline in relationship satisfaction is more rapid and steeper than in childless couples (Lawrence, Rothman, Cobb, Rothman, & Bradbury, 2008) and persists for up to 7 years (Keizer & Schenk, 2012).

1.1 Reasons for Decline in Relationship Satisfaction

The mean decline in relationship satisfaction in new parents is likely attributable to the many changes parenthood brings. First, the birth of a child adds about 40 hours of extra work per week to the couple household (Halford et al., 2015). On average women do about 75 % to 80% of that extra work (e.g., Bianchi, Milkie, Sayer, & Robinson, 2000) and men often focus more on paid work after birth (Baxter, Hewitt, & Haynes, 2008). This shift toward traditional family roles has been shown to go against prenatal expectations of a balanced family–work arrangement which can lead to negative feelings towards the relationship (e.g., Twenge, Campbell, & Foster, 2003). Second, sleep deprivation of parents with young children is almost universal (Medina, Lederhos, & Lillis, 2009) and has been shown to have a negative impact not only on individual well-being and depression (Cottrell & Khan, 2005; Tomfohr, Buliga, Letourneau, Campbell, & Giesbrecht, 2015), but also on relationship satisfaction

(Troxel, Robles, Hall, & Buysse, 2007). Third, pleasurable activities like meeting friends, participating in exercise and sport, and time as a couple decrease as the time demands of infant care reduce the available time for these activities (Claxton & Perry-Jenkins, 2008). In turn, reduced couple time is associated with deterioration of couple communication, an increased rate of relationship conflicts (Curran, Hazen, Jacobvitz, & Sasaki, 2006; Kluwer & Johnson, 2007), and a decline in perceived relationship intimacy (Claxton & Perry-Jenkins, 2008; Dew & Wilcox, 2011). Fourth, partner support decreases five months postpartum (Parfitt & Ayers, 2014), and fifth, couples not only feel psychologically alienated but also physically, as loss of libido and decreased frequency of sexual intercourse are quite common in young parents (Hipp, Kane Low, & van Anders, 2012; Parfitt & Ayers, 2014).

1.2 Effects of Stress on the Relationship

The overwhelming new tasks and changes related to new parenthood can increase stress (Doss, Rhoades, Stanley, & Markman, 2009b). According to the Transactional Stress Model (Lazarus & Folkman, 1984) stress is defined as a dynamic transaction in a person's relation with the environment and an individual is likely to perceive stress if there is a subjective imbalance between the internal and external requirements (e.g., expectations regarding the child, being a good parent) and a person's internal and external resources (e.g., social support, paid household help) to deal with a certain stressor. The evaluation of requirements and resources can be influenced by one's mood, one's personality and the situation itself. Thus, the experience of stress is very subjective. On an individual level, stress is, amongst others, associated with depression and other psychological disorders (e.g. Heim et al., 2002), and verbal aggression (Bodenmann, Meuwly, Bradbury, Gmelch, & Ledermann, 2010).

Nevertheless, humans are not loners but rather are embedded in a social environment. The requirement for a systemic perspective on stress (and coping) for couples has been fulfilled by extending Lazarus' and Folkman's model (1984) with the introduction of the

Systemic-Transactional Model by Bodenmann (1995). According to the model, stress (and coping) are mutually interdependent processes within the two partners and both partners are – directly or indirectly– affected by a stressor (Bodenmann, 1997, 2005). There are three ways that external stress (stress originating outside of the close relationship; e.g., stress due to children, stress at work, financial stress) can spill over into the relationship (Bodenmann, 2000): through (a) an accumulation of stress (e.g., addition of daily hassles such as a crying baby all day or missing the bus), (b) severity and duration of stress (e.g., major life events such as becoming parents, marriage), and / or (c) exceeding of individuals' coping resources.

1.3 Consequences of low Relationship Satisfaction

Couples becoming parents are likely to decrease steeply in relationship satisfaction, due to the many changes that occur during the transition to parenthood (Halford et al., 2015) and the increased level of stress (Doss, Rhoades, Stanley, & Markman, 2009b), as presented above. Consequences of low relationship satisfaction are manifold and exist on an individual, couple and child level. On the individual level, personal well-being was found to be positively associated with relationship quality in cross-sectional as well as longitudinal studies (Proulx, Helms, & Buehler, 2007; Whisman, Uebelacker, Tolejko, Chatav, & McKelvie, 2006). In a similar vein, Kamp, Dush, Taylor, and Kroeger (2008) found that a decline in depressive symptoms was linked to relationship happiness. Additionally, couples showing high relationship happiness had the least decrease less in life happiness over a time span of 20 years compared to couples scoring low in relationship happiness. Relationship quality is not only linked to well-being but also to physical health. A recent meta-analysis found relationship quality to be associated with lower risk of mortality and lower cardiovascular reactivity during conflicts (Robles, Slatcher, Trombello, & McGinn, 2014). Wounds have been found to heal faster after social support interactions than after conflict discussions and

wounds of couples at high-hostility healed at 60% of the rate of low-hostile couples (Kiecolt-Glaser et al., 2005).

A plethora of studies have investigated relationship satisfaction and its associations with different relationship aspects. Relationship satisfaction has been shown to be associated with spending time as couple (Johnson & Anderson, 2013), couples' communication (see Woodin, 2011 for an overview), mutual dyadic support (Falconier, Jackson, Hilpert, & Bodenmann, 2015), relationship self-regulation (Halford, Lizzio, Wilson, & Occhipinti, 2007), sexual satisfaction (Bodenmann, Ledermann, & Bradbury, 2007) to name only a few of the associated factor. However, low relationship satisfaction often results in separation and divorce (see also Chapter 2.2; Bodenmann, 2005; Bodenmann & Cina, 2006), which has been shown to have devastating consequences for affected partners (Amato, 2000; Hughes & Waite, 2009).

Poor relationship quality does not only have an impact on individuals and couples, but also on children (see for an overview Cummings & Davies, 2010). Decline in couple relationship satisfaction across the transition to parenthood is associated with less sensitivity in mothers and less positive parent-child interaction (Petch & Halford, 2008), and negative parental interactions are associated with insensitive parenting and inconsistent discipline (Cina & Bodenmann, 2009). Additionally, offspring from dissatisfied parents have been shown to suffer more often from physical problems such as infectious diseases (Henriksen & Thuen, 2015) and sleep disorders (El-Sheikh, Buckhalt, Mize, & Acebo, 2006), are at elevated risk for mental difficulties (Troxel & Matthews, 2004), and problems at school and in their academic career (Ghazarian & Buehler, 2010; Zemp, Bodenmann, & Beach, 2014). Summarizing, low relationship satisfaction is not only a risk factor for physical and mental health (Ruffieux, Nussbeck, & Bodenmann, 2014), for future relationship difficulties but also for child functioning. It is therefore worthwhile, to prevent couples from deteriorating in their relationship satisfaction.

2. Conceptual Framework of Relationship Functioning

Different theories and models can be applied to explain changes and challenges in the transition to parenthood. First, a theory focusing on individuals will be presented followed by two models focusing on couples.

Havighurst (1948) focused on normative events in individuals' lives, stating that individuals face consecutive developmental tasks' within their lifespan. To start a family, rear children and to manage a home have been declared as developmental tasks in early adulthood. Successful completion of these tasks facilitate the mastery of subsequent developmental tasks and leads to normative development and is associated with increased physical and mental well-being (Furman & Shaffer, 2003). Thus, according to Havighurst (1948), the transition to parenthood is seen as a normative event, which can decrease well-being if not accomplished.

2.1 The Vulnerability-Stress-Adaptation Model

The vulnerability–stress–adaptation model by Karney and Bradbury (1995) provides a way to understand changes in couples' relationships when transitioning to parenthood (see *Figure 1*) and highlights a more systemic view of the transition to parenthood. It assumes that relationship distress and divorce are the consequence of the combination of the following three intercorrelated factors: (a) *enduring vulnerabilities* (e.g., problematic personality traits such as neuroticism, turbulent family of origin, limited education, cohabitation history) (b) *stressful events* (e.g., major life events, stressful circumstances, normative transitions) and (c) *adaptive processes* (e.g., communication, commitment, inability to empathize with and support the partner, defensive, hostile, and disengaged problem solving skills). Enduring vulnerabilities can increase the probability of experiencing an event as stressful and adapting badly to the event. In line with Lazarus and Folkman (1984) the nature of the stressful events

are subjective and can vary considerably between the couples (e.g., the gender of the baby or the timing of the pregnancy). Couples can use different adaptive processes to help them cope with all the potential stressful events after birth. Thus, according to this model, distress and dissolution are most likely to occur in couples becoming parents who have a high degree of enduring vulnerabilities (e.g., lack of education, divorce in the family of origin; Halford, 2011) and possess poor adaptive processes (e.g., poor communication skills, low dyadic coping). Additionally, marital quality is hypothesized to swing downward with acute life events, and these fluctuations are expected to be especially large when chronic stress is high (Reimer & Tillmanns, 1996).

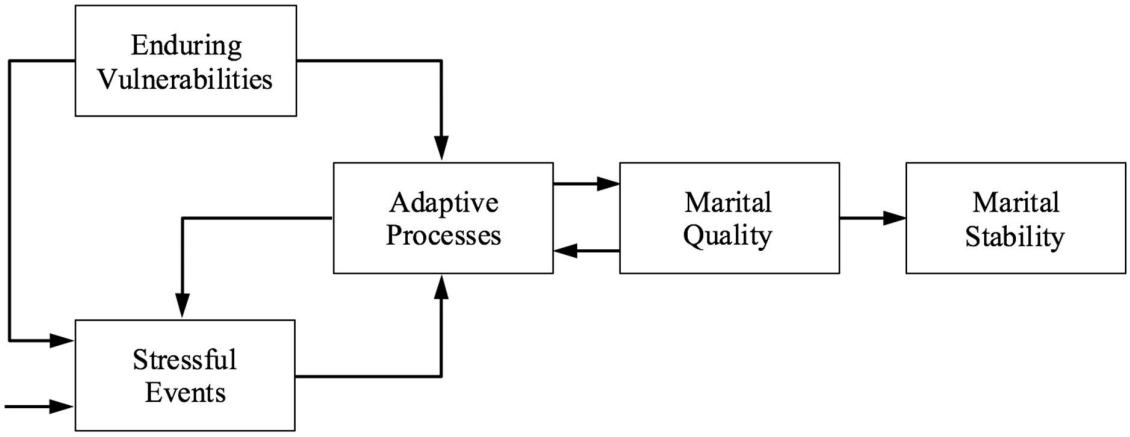

Figure 1: The Vulnerability-Stress-Adaptation Model (VSA; Karney & Bradbury, 1995)

The VSA model provides useful information to understand changes in relationships and differences between couples becoming parents by highlighting the interaction between personal characteristics and vulnerabilities, external circumstances and the reaction to those circumstances. Nevertheless, the transition to parenthood should not be seen as a negative stressful event per se, as many couples experience the birth of a child as an event of joy and pride (Gottman & Notarius, 2000) and there is considerable variability around the mean decline in relationship satisfaction in couples becoming parents (Belsky & Rovine, 1990).

2.2 Stress-Divorce-Model

The VSA model can provide information on *why* relationship satisfaction can decrease during the transition to parenthood, but not *how*. In contrast, Bodenmann's stress-divorce-model (Bodenmann, 1995, 2000) is more specific in the description of the process of *how* relationship dissatisfaction can develop. The model emphasizes the effect of chronic daily stress on couples' functioning (e.g., time as a couple, communication). In addition to the effects of stress, the model describes how mediators of couples' functioning (e.g., time as a couple, individual well-being) co-vary with relationship satisfaction and the probability of divorce. In detail, the model suggests (see *Figure 2*) , that external stress (e.g., having a child) influences relationship quality by (a) spending less time together as a couple, which decreases the amount of common experiences, self-disclosure and the feeling of we-ness, (b) reducing the quality of communication by leading to less positive interactions and more negative communication behaviors such as invalidation or withdrawal, (c) raising the likelihood of mental and physical health problems such as mood disorders, sleep problems or sexual disturbances, and (d) increasing the probability of expression of problematic personality traits such as uneasiness, inflexibility and anxiety within the relationship. These steps result in alienation, a condition of missing common knowledge about each other, due to absent mutual updates about each partners' development. Additionally, partners may also increase negative attributions related to the partner and decrease libido (Randall & Bodenmann, 2009). Thus, the probability of divorce rises when partners disclose less about their individual lives, dreams, interests and needs, and they steadily become unknown to each other and/or have more conflicts (Bodenmann, 2005). Summing up, the stress-divorce model includes many factors that are likely to emerge during the transition to parenthood (e.g., lack of time as a couple, psychological and physical alienation and change in communication) and thus helps us to understand how relationship dissatisfaction can develop and how this can lead to

increased likelihood of separation or divorce. On the other hand, it highlights the possibility of moderating harmful effects of stress using different individual or dyadic skills (e.g., individual and dyadic coping; Bodenmann, 2005).

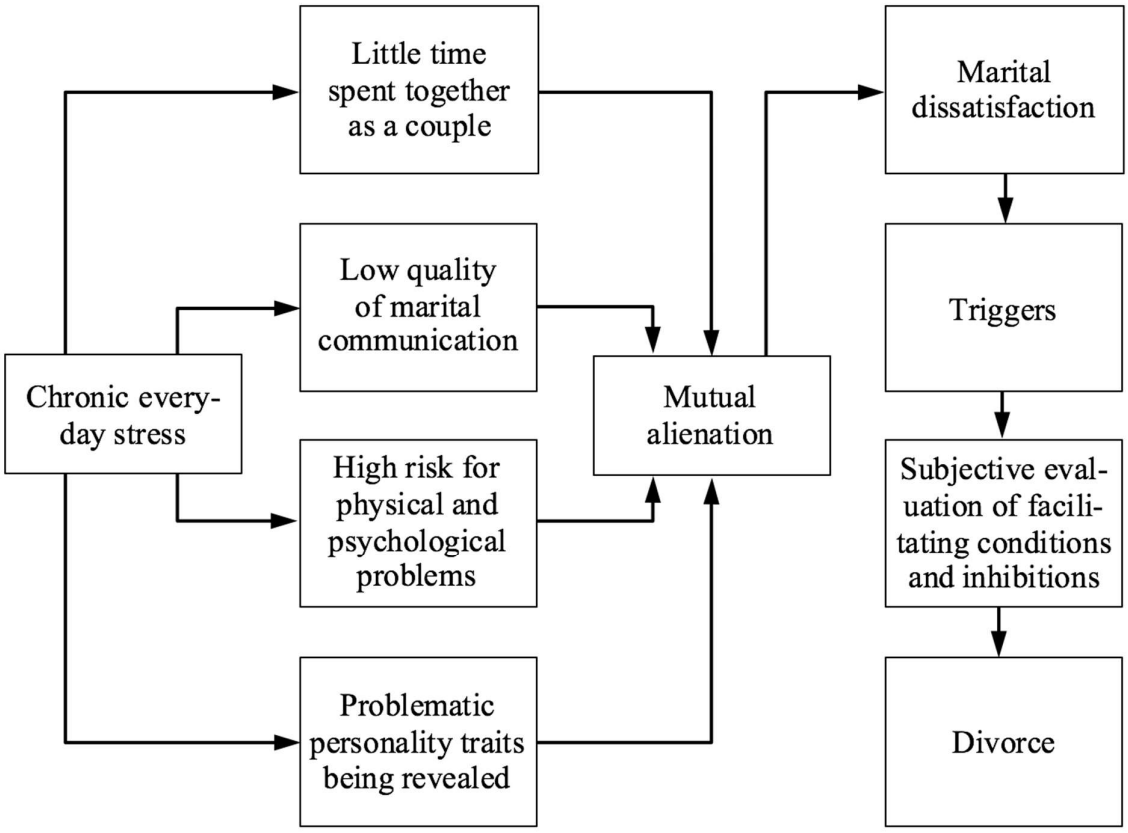

Figure 2: Bodenmann's Stress-Divorce Model (Bodenmann, 1995, 2000)

3. (Meta-) Skills to Manage Challenges

Couples transitioning to parenthood face many changes which affect them deeply and often lead to dissatisfaction in their relationships (see Chapter 1.1) which in turn can lead to manifold and severe consequences (see also Chapter 1.3). Fortunately, couples are not at the mercy of these negative changes but can apply skills that might be helpful to master the challenge of transitioning to parenthood.

3.1 Communication

Communication is one of the most extensively examined predictors of relationship satisfaction and stability (Karney & Bradbury, 1995) and its high relevance for couples' functioning (e.g., Gottman, 1994; Markman, Rhoades, Stanley, Ragan, & Whitton, 2010). Successful communication has been shown not only to be correlated with relationship satisfaction (Woodin, 2011), but also to predict the trajectory of couple relationship satisfaction (e.g., Hanzal & Segrin, 2009; McNulty & Russell, 2010). Hostility expressed during conflict was associated with lower relationship satisfaction (Woodin, 2011) and negative communication behaviors predicted faster rates of negative change in relationship satisfaction (Johnson et al., 2005). Additionally, positive communication skills predicted slower rates of negative change in relationship satisfaction (Johnson et al., 2005), and intimacy and problem solving were related to higher relationship satisfaction (Woodin, 2011). High levels of negative communication and low levels of positive affect led to a sharp decline in satisfaction, whereas high levels of positive affect eased the damaging effect of high levels of negative behavior(Johnson et al., 2005). Thus, to predict change in relationship satisfaction both positivity and negativity are important variables (Ruffieux et al., 2014). This represents the social learning theory stating that reinforced positive behavior and ignored or disciplined negative behavior enhance relationship quality (e.g., Stuart, 1969).

Evidence based approaches of relationship education (RE) focus on the training of potentially changeable variables that are associated with relationship satisfaction. Therefore, many RE programs target communication, the behaviors partners engage in when talking about important issues and expectations in their relationship. A meta-analysis by Hawkins, Blanchard, Baldwin and Fawcett (2008) not only confirmed the plethora of studies finding that RE has positive effects on communication but also unveiled that RE effects on communication are somewhat larger than on relationship satisfaction. RE focusing on communication seems to be beneficial to both genders, as no sex differences were found.

3.2 Dyadic Coping

As communication often deteriorates under conditions of stress (particularly during the transition to parenthood, which is associated with multiple stressors for the couple and young family), dyadic coping skills may play a key role in buffering negative effects of stress on the couple's life. Dyadic coping (DC) is an interpersonal process during which the stress signals of one partner are responded to by corresponding verbal or nonverbal dyadic coping reactions on the part of the other (Bodenmann, 1997). There are different forms of DC (Bodenmann, 1997): *Supportive DC* happens when only one partner (A) is stressed (e.g., because of their job situation) and the other partner (B) has resources to support partner A in adapting to the stressful situation. *Common DC* occurs when both partners are affected by the same stressor (e.g., sleep deprivation because of the crying baby) and want to cope as a team. Supportive and common DC are the two most important forms of DC. Further, there is *delegated DC* which occurs when only one partner is stressed and asks the other to take responsibility for certain tasks (e.g. do the shopping, pick up the children). N*egative DC* subsumes all coping forms that are not helpful (i.e., ambivalent DC, superficial DC, and hostile DC).

Several studies have shown that DC is related to higher relationship satisfaction (e.g., Bodenmann, Meuwly, & Kayser, 2011; Herzberg, 2013; Papp & Witt, 2010). Studies by

Falconier, Nussbeck, and Bodenmann (2013) as well as Merz, Meuwly, Randall, and Bodenmann (2014) additionally illustrate the buffering effect of DC on the damaging impacts of stress on relationship functioning. DC is a key factor of the evidence-based relationship education program Couple Coping Enhancement Training (CCET; Bodenmann & Shantinath, 2004). CCET has not only been shown to increase communication skills and dyadic coping (Bodenmann, Pihet, Shantinath, Cina, & Widmer, 2006; Bodenmann, Pihet, Shantinath, et al., 2006; Schaer, Bodenmann, & Klink, 2008), but also intimacy and relationship satisfaction (Ledermann, Bodenmann, & Cina, 2007; Randall, Bodenmann, Molgora, & Margola, 2010), and psychological well-being (Pihet, Bodenmann, Cina, Widmer, & Shantinath, 2007). Even though CCET has not been evaluated in couples becoming parents; it has been associated with reduced child problems (Bodenmann, Cina, Ledermann, & Sanders, 2008) through enhanced relationship quality (Zemp, Milek, Cummings, Cina, & Bodenmann, 2016).

3.3 Relationship Self-Regulation

To accomplish a positive change in relationship satisfaction due to relationship skills like communication and DC, these skills need to be practiced repeatedly. The application of these skills does not only require practice and resources, but also constant self-evaluation to assess whether changed behaviors led to the expected positive outcome. Halford, Sanders, and Behrens (1994) introduced the concept of relationship self-regulation (SR) which has been shown to be associated with relationship satisfaction (e.g., Halford, Moore, Wilson, Farrugia, & Dyer, 2004). SR involves the individuals assessing their own relationship, setting self-directed goals, implementing those goals in the context of the relationship and finally evaluating how the changes affect relationship satisfaction. SR focuses on behavior because it has the most influence on the partner and the relationship. This focus highlights the fact, that observable behavior must mediate effects of any cognition and affect (Halford et al., 1994). There are two forms of SR (Wilson, Charker, Lizzio, Halford, & Kimlin, 2005): *Relationship*

strategies refer to the work that one invests in order to maintain and improve their own relationship and *relationship effort* relates to one's willingness and persistence to improve the relationship, despite potential difficulties. Unlike other relationship skills, SR does not focus on a specific behavior like communication or dyadic coping but rather on the process of implementing behavioral changes beneficially. This reflects the assumption that in effective RE partners are instructed in skills to change their own behaviour (Wilson et al., 2005). Therefore, SR can be seen as a relationship meta-skill which can be beneficial when implementing other relationship skills such as communication or DC.

Recent research has shown that SR is associated with relationship stability and satisfaction (Halford, 2011; Halford et al., 2007; Hardy, Soloski, Ratcliffe, Anderson, & Willoughby, 2015; Shafer, James, & Larson, 2015) and that these effects were stronger than those of communication (Halford et al., 2007; Wilson et al., 2005).Couples scoring higher on SR are emotionally healthier (Brown, Larson, Harper, & Holman, 2016) and show less aggression (Halford & Wilson, 2009). Additionally, in women, SR seems to be positively associated with the mother-child relationship, meaning that women who perceived high quality in the mother-child relationship, scored higher in SR than women who reported low mother-child relationship quality (Brown et al., 2016). SR is part of the evidence-based relationship education program Couple CARE (Halford et al., 2004) and Couple CARE for Parents (CCP Halford, Petch, & Creedy, 2010). Both programs have been shown to enhance SR, communication and relationship functioning (Halford, Wilson, et al., 2010; Petch, Halford, Creedy, & Gamble, 2012a). The CCP has additionally been shown to be beneficial for aspects of parenting (Halford, Petch, et al., 2010).

4. Relationship Education (RE)

4.1 Relationship Education in General

The research on prevention of human problems is growing and encouraging (e.g., Flay et al., 2005; Rishel, 2007). Prevention does not only focus on individual mental health problems, but also includes RE. RE can be offered to couples not reporting significant relationship distress (universal prevention), to couples who are at elevated risk for relationship difficulties (selective prevention) or to couples with high, but nonclinical, relationship problems (indicated prevention; Blanchard, Hawkins, Baldwin, & Fawcett, 2009). RE aims to support couples to form and sustain healthy relationships (Hawkins et al., 2008). Two elements have been identified as the core of RE: the improvement of communication and problem-solving (e.g., reducing accusations or enhancing listening skills), and the presentation of variables that are associated with relationship satisfaction (e.g., shared expectation, management of finances; Gottman & Silver, 2015). Different meta-analyses investigated the effects of RE, finding effects between $d = .36$ (Hawkins et al., 2008),$d = .58$ (Fawcett, Hawkins, Blanchard, & Carroll, 2010) and $d = .80$ (Carroll & Doherty, 2003) of RE on relationship satisfaction and even stronger effects for skills (e.g., communication; Fawcett et al., 2010; Hawkins et al., 2008). Moderate intervention duration 9-20 hours have shown the best effects (Hawkins et al., 2008). Additionally, RE is linked to beneficial effects on psychological well-being (Pihet et al., 2007) and cortisol reactions following a conflict with one's partner (Ditzen, Hahlweg, Fehm-Wolfsdorf, & Baucom, 2011).

4.2 RE for Couples Becoming Parents

While some potential stressful and dissatisfying factors during the transition to parenthood can decrease (e.g., lack of sleep or reduction of sexual activity and frequency;

Henderson, France, & Blampied, 2011; Hipp, Kane Low, & van Anders, 2012), other factors might exacerbate dyadic tensions (e.g., dysfunctional communication and reduced mutual dyadic support Curran et al., 2006; Simpson, Rholes, Campbell, Tran, & Wilson, 2003) and even lead to separation or divorce. The consequences of divorce are not only (in most cases) deleterious for both partners but also for children (see Chapter 1.3). In nearly half of the divorces in Switzerland (45%), at least one minor child was involved; in 8% of all divorces the child was younger than 4 years, and in 25% of the divorces child was between 5-9 years old. Thus, providing couples becoming parents with key knowledge and skills to better manage the transition seems promising for not only partners' relationship satisfaction (Petch, Halford, Creedy, & Gamble, 2012), but also the health of the child (Zemp & Bodenmann, 2015).

A number of couple relationship education programs have been evaluated for their effects with new parent couples (Cowan & Cowan, 2014). The content varies somewhat between them, but most cover helping the couple develop shared realistic expectations about parenthood, discussing the division of parenting tasks, couple communication, problem solving and enriching the couple relationship, and some also include content on managing infant care (Halford et al., 2015).

A meta-analysis of relationship education for couples making the transition to parenthood found a small mean effect size improvement in relationship satisfaction (Pinquart & Teubert, 2010) which is lower than the effects of RE in non-parents (e.g., Hawkins et al., 2008). Nevertheless, there is considerable variability in findings across studies done with couples transitioning to parenthood (Doss & Rhoades, 2016). Some studies found general positive effects of RE for both partners. Schulz, Cowan, and Cowan (2006) found a less steep decline in relationship satisfaction in couples transitioning to parenthood compared to the control group. Shapiro and Gottman (2005) found positive effects of RE on relationship

quality, postpartum depression and hostile interaction at 3 and 12 months postpartum. Gambrel and Percy (2015b) reported increased acceptance and awareness, deepened intimate connection, and improved confidence in becoming good parents in their participants after RE, and Halford and colleagues (2010) reported significantly reduced negative couple communication at 6 months postpartum, which in turn prevented erosion of relationship adjustment and self-regulation for women at 12 months postpartum (Halford, Petch, &Creedy, 2010). Others found effects primarily for mothers' but not fathers' satisfaction (e.g., Daley-McCoy, Rogers, & Slade, 2015; Doss et al., 2014; Halford, Petch, et al., 2010), less deterioration in couple communication and lower psychological distress for men but not for women 6 weeks postpartum(Daley-McCoy et al., 2015) and reduced negative affect for men but not women (Gambrel & Piercy, 2015a). In contrast, some studies found no effects of RE at all (e.g., Feinberg, Jones, Kan, & Goslin, 2010; Gjerdingen & Center, 2002; Trillingsgaard, Baucom, Heyman, & Elklit, 2012; Wood, Moore, Clarkwest, Killewald, & Monahan, 2012). Variability in couples' adjustment to parenthood and mixed effects of RE tailored to couples becoming parents highlight the need to examine factors associated with that differential adjustment and the mechanism of RE.

4.3 Self-Directed RE

RE has been shown to produce large effects in couples (Fawcett et al., 2010; Hawkins et al., 2008) and the percentage of participating couples in premarital RE increased from 7 % of marriages in 1930s and 1940s to 44 % since 1990 (Stanley, Amato, Johnson, & Markman, 2006). Couples at high risk and distressed couples still are a minority in the couples attending RE programs (e.g., Doss, Rhoades, Stanley, Markman, & Johnson, 2009; Halford, O'Donnell, Lizzio, & Wilson, 2006), which is particularly regrettable as they might benefit most from RE (McAllister, Duncan, & Hawkins, 2012). This may be due to reasons like fear of self-disclosure in group settings, restrictions regarding money or time and limited child care

possibilities (Halford et al., 2004). The increasing number of self-directed RE programs (McAllister et al., 2012) tries to conquer these limiting factors by providing RE in different forms ranging from internet assessments (Halford, Petch, et al., 2010), to flexible delivery programs (Halford et al., 2004) to self-help books (Doss, Rhoades, Stanley, & Markman, 2009a). A recent meta-analysis evaluating the effects of self-directed RE found only a very small and nonsignificant effect size of self-directed RE on relationship quality (d = .032) and a small but significant effect on communication (d = .016; McAllister et al., 2012). Nevertheless, some studies found larger effect sizes of self-directed RE on relationship functioning and health (Braithwaite & Fincham, 2011), SR in women (Halford et al., 2004) and DC and conflict behavior in women (Bodenmann, Hilpert, Nussbeck, & Bradbury, 2014). There is self-directed skill-based training for parents leading to enhanced parenting skills and reduced child behavior problems (e.g., Sanders, Markie-Dadds, Tully, & Bor, 2000). However, to the best the author's knowledge, there is no study testing the effectiveness of a purely self-directed RE program for couples becoming parents on couple outcomes. The blended (i.e., combining self-directed elements with face-to-face elements) RE program *Couple CARE for parents (CCP)* has been evaluated in two controlled studies (Halford, Petch, et al., 2010; Petch et al., 2012a) finding positive effects on negative communication immediately after RE, relationship adjustment and SR in women, and relationship satisfaction and intrusiveness in parenting in high risk women.

4.4 Mediators of RE Effects

4.4.1 Communication as Mediator

As noted previously, a key target of RE for couples becoming parents has been couple communication. This focus of RE is not specific to new parents, with almost all RE for couples focusing on improving couple communication (Berger & Hannah, 2013). Moreover,

couples who have completed RE with communication training included, often report they believe communication is the most important aspect of RE (Petch et al., 2012a; Stanley, 2001). Research testing the proposition that improved communication mediates the effects of RE on relationship satisfaction has produced mixed findings.

In some studies RE has been found to cause a positive effects on relationship satisfaction, but not on couples' communication (e.g., Halford, Moore, Wilson, & Dyer, 2006). Bodenmann, Bradbury, and Pihet (2008) showed in a 2-year longitudinal study that enhanced positive communication by women, and reduced negative communication by men, mediated the effects of RE on relationship satisfaction. In a similar vein, Stanley, Rhoades, Olmos-Gallo, and Markman (2007) found that RE did improve communication and, as expected, decreases in negative communication by men and women after RE predicted future relationship satisfaction. Also Williamson and colleagues (2015) showed that RE caused a decrease in males' negativity, which in turn was positively related to relationship satisfaction. In contrast, wives' increased positive communication predicted an increase in marital distress. In a 5.5-year follow-up of couples receiving RE, the expected link was found between declines in husbands' negativity and increased likelihood of sustained relationship satisfaction. But wives' increases in positive communication predicted a paradoxical increased likelihood of marital distress for themselves and for their partners, while decreases in wives' negative behaviors were unrelated to later marital outcomes (Schilling, Baucom, Burnett, Allen, & Ragland, 2003). Baucom, Hahlweg, Atkins, Engl, and Thurmaier(2006) replicated this finding to some extent showing that 12% of couples who showed the most increase in positive communication after RE deteriorated in relationship satisfaction.

One plausible explanation for the inconsistent findings about the association of changes in couple communication after RE and future relationship satisfaction is that mediation effects might be moderated by pre-intervention levels of communication (Halford & Bodenmann, 2013). For example, consider couple 1 who begins RE with a low level of negative

communication and does not change their negative communication after RE, and therefore has a small change score. Consider also couple 2 who starts RE with highly negative communication that is reduced by RE but is still higher after RE than couple 1 was before RE, but has quite a large change score. Using the change score to predict future relationship satisfaction, we are testing the hypothesis that couple 2 would have higher relationship satisfaction than couple 1 because they changed more than couple 1. However, it is more likely that the communication after RE, rather than the extent of change, influences future relationship satisfaction (Wilson & Halford, 2008). If the focus was on communication after RE we would predict couple 1 would have higher satisfaction than couple 2. In summary, the inconsistent findings on whether change in communication mediates the effects of RE on satisfaction might reflect sample differences in couple communication before RE. Only couples with poor communication (i.e. high negative and low positive communication) before RE are likely to show that positive changes in communication mediate effects of RE on relationship satisfaction

A second possible reason for the inconsistent findings on communication mediating the effects of RE is that many of the RE interventions have been done with couples who showed little change in relationship satisfaction (probably couples at low risk) across time. If the dependent variable is the slope of the trajectory of relationship satisfaction, and the mean change and variability around that change are small, then the power to detect an association between communication effects and the trajectory of satisfaction will be low with the modest sample sizes in observational studies, which could generate inconsistent findings.

4.4.2 Other Potential Mediators

Risk factors are a possible explanation for mixed findings of RE mediated by communication. They also may be associated with the variability of the mean decline in couples becoming parents. Research has identified a number of risk factors that predict

deteriorating relationship satisfaction in all couples, and which seem likely to influence new parent couples as well. Common risk factors that increase the probability of relationship distress are certain personality traits, such as high neuroticism (DiLillo et al., 2009), divorce in the partner's family of origin (Doss, Rhoades, Stanley, & Markman, 2009b), social disadvantage (Cutrona, Russell, Burzette, Wesner, & Bryant, 2011), stress, low level of dyadic coping (Bodenmann, Pihet, Shantinath, et al., 2006) and interpartner violence (IPV; Rogge & Bradbury, 1999).Some of these risk factors that impact upon all couples might have a particularly pronounced effect on new parents. For example, given the additional expenses incurred after having a child, low male partner income (Doss, Rhoades, Stanley, & Markman, 2009b) and financial stress (Amato, 1996; Conger, Rueter, & Elder, 1999) are likely to be particularly challenging for couples. For couples becoming parents, there are some risk factors specific to that transition including having an unplanned pregnancy (Cox, Paley, Burchinal, & Payne, 1999), or birth complications(Halford et al., 2015). As these risk factors vary between couples, couples vary a lot on the extent to which the transition to parenthood is associated with a decline in relationship satisfaction, and whether there is any improvement across time. Thus, risk factors may be another mediator of RE. If that was the case, RE should focus more on modifiable risk factors like financial stress or interpartner violence.

The predominant focus on communication skills is intriguing given that there are other factors that are associated with relationship dissatisfaction and divorce (Amato, Booth, Johnson, & Rogers, 2007; Karney & Bradbury, 1995). As communication often deteriorates under conditions of stress (particularly during the transition to parenthood which is associated with multiple stressors for the couple), DC skills may play a key role in buffering negative effects of stress on couples' lives. The meta-skill of SR might be beneficial to couples transitioning to parenthood too, as it enables individuals to think of different ways to improve their relationship by changing their own behavior, whether that may be communication or DC

behaviors or something else. Thus, to bring together the potentially powerful skills of communication, DC, and the meta-skill of SR, along with other relevant factors for couples becoming parents (e.g., shared realistic expectations, problem solving and infant care), seems to be a promising way to refine RE for couples becoming parents in order to strengthen them during a challenging phase of their lives.

4.5 Theoretical Background of Interventions

The self-management framework provides profound information about the structure and principles of behavioral intervention and prevention programs (Lorig & Holman, 2003). Self-management is the process in which a person employs skills (i.e., cognitive or behavioral) to ease the accomplishment of a goal, which otherwise is difficult to achieve for internal (e.g., disturbing habits of the individual) or external (e.g., social expectations) reasons (Karoly, 1993). To do so, changes in behavior (or cognition) might be needed. Changing behavior is difficult and exhausting, as humans tend to fall back to familiar and automatic habits, even though they might be disadvantageous. Thus, a stepwise and externally supported learning process has been assumed to be a very promising way to change behavior sustainably (Kanfer, 1975). The aim of the supported learning process is to teach people not only generalizable coping skills, but also the autonomic capability to analyse situations and anticipate behavioral outcomes to prevent and manage future difficulties more effectively than in the past (Kanfer, 1975). On one hand, the framework of self-management is linked to other meaningful approaches (e.g., social learning theory, self-control, self-regulation and cognitive behavioral therapy). On the other hand it gives very practical inputs about how to establish self-management in individuals, what to focus on when planning an intervention (e.g., to implement changes in several smaller steps instead of one big step) and how to behave in the role of the teaching person or the therapist (e.g., to focus on concrete behavior; Kanfer, Reinecker, & Schmelzer, 2012). Research has shown that self-management competencies are

helpful during phases of transition (Magnusson & Redekopp, 1992).Several studies tested the effectiveness of these competencies in the area of physical health prevention (see for an overview Barlow, Wright, Sheasby, Turner, & Hainsworth, 2002; Lorig & Holman, 2003) mental health prevention (e.g., Cook et al., 2009; Druss et al., 2010; Lawn et al., 2007) depression (Kanfer & Hagerman, 1981), obsessive-compulsive disorders (Reimer & Tillmanns, 1996), anxiety (Snait, Owens, & Kennedy, 1992), and the handling of mental health problems (e.g., Cook et al., 2009; Druss et al., 2010; Lawn et al., 2007).

EMPIRICAL CONTRIBUTIONS

5. Research Questions

The present thesis strives for a better understanding of couples becoming parents and the mechanism of effectiveness of relationship education (RE) aiming to strengthen couples. This is important, as the transition to parenthood is known to be challenging for many couples and consequences of low relationship satisfaction are manifold. Effects of relationship education (RE) programs tailored to couples becoming parents are small to moderate and findings are mixed on whether communication, a central aspect of most RE, mediates the effects of RE on couple satisfaction.

Drawing on the arguments outlined in the chapters above, three empirical studies were conducted to fill in the existing gaps in the literature and empirically test time effects of the transition to parenthood and the effects of different RE programs on stress, relationship (meta-) skills (i.e., communication, DC, SR), relationship satisfaction. Study I has been done with a sample of $N = 250$ Australian couples while Study II and Study III[1]are based on a sample of $N = 307$ Swiss couples. The use of considerable sample sizes provides reasonable power to detect effects. Additionally, inclusion of data from both partners (Study I and II) allowed to test for actor and partner effects and to statistically model couples' interdependence (Cook & Kenny, 2005). Both partners perspectives should be taken into account in research on couple relationships (Thompson & Walker, 1989), as two realities exist in every romantic relationship, "his and hers" (Bernard, 1972). Moreover, different phases of the transition to parenthood (last trimester of pregnancy up until to 28 months after birth) were considered to not only investigate effects *after birth* (Study I and II), as has been done in the majority of studies examining the

[1]This research has been funded by the Swiss National Science Foundation (SNF: 146775)

effect of the transition to parenthood, but also to be able to investigate effects *before birth* (Study III).

Study I

In the first study, set out in Chapter 6, we first examined the effects of CCP, an established RE for couples becoming parents, on positive and negative communication (see *Figure 3*). Secondly, we investigated if the communication that couples exhibited after RE, or the change in communication across the course of RE, predicted the slope of relationship satisfaction over time. Self-report and behavioral data from 250 Australian couples becoming parents were analyzed with a sex-specific multi-level model in which repeated observations across time formed level 1 and couples formed level 2.

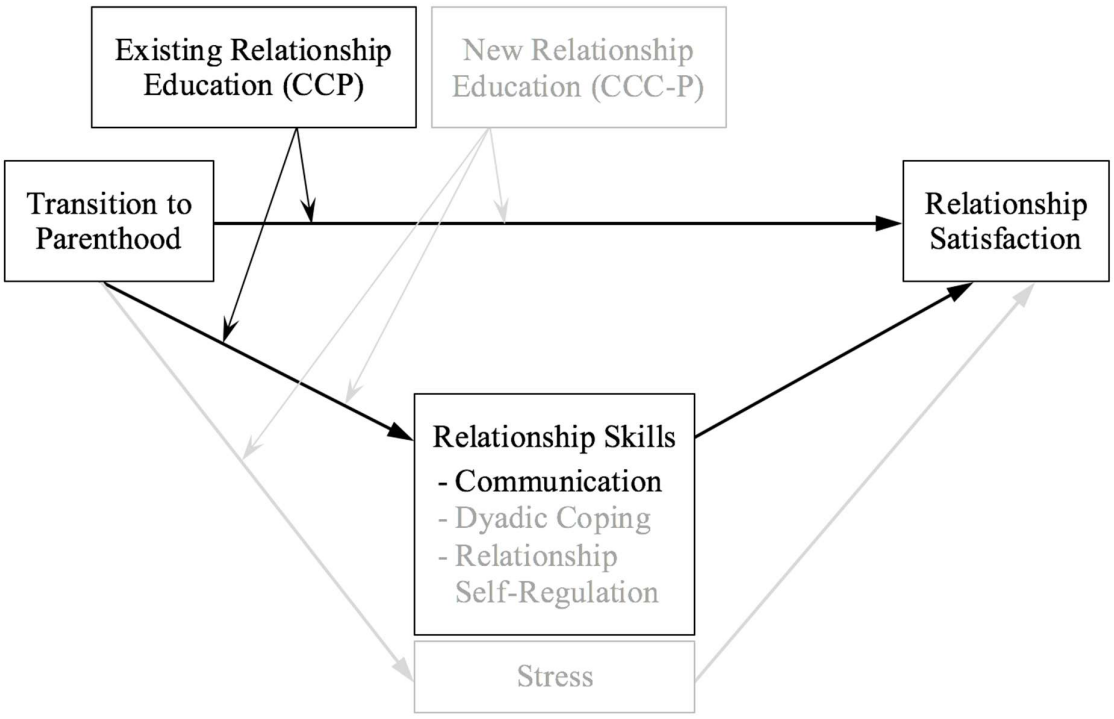

Figure 3: Conceptual Framework of Study I

Study II

The second study, described in Chapter 7, was undertaken to examine if there was a change in stress, dyadic coping, relationship self-regulation, communication, and relationship satisfaction due to the transition to parenthood (see *Figure 3*). Furthermore, we tested whether stress and relationship skills (i.e., DC, SR and communication) were associated with relationship satisfaction within the same point of measurement. Self-report data from 103 Swiss couples becoming parents were analyzed with a sex-specific multi-level model in which repeated observations across time formed level 1 and couples formed level 2.

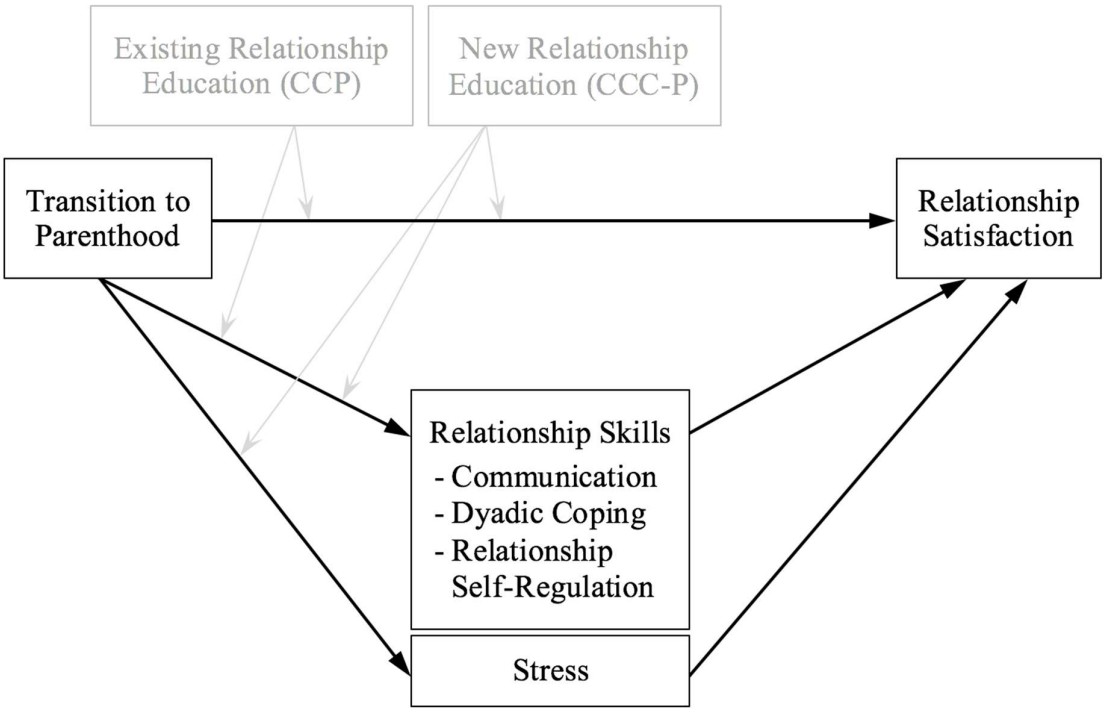

Figure 4: Conceptual Framework of Study II

Study III

The third study, outlined in Chapter 8 aimed to investigate the short-term effects of two different formats of RE delivered to first time parents before birth: a face-to-face RE and a web-based self-directed movie (see *Figure 5*). While both intervention formats targeted DC, SRs and communication, the movie was less extensive. To examine the short-term effects, we used data from 307 Swiss couples expecting their first child and calculated 3-way ANOVAs (treatment × gender × time (T1 vs. T2)) with repeated measurements on gender and time.

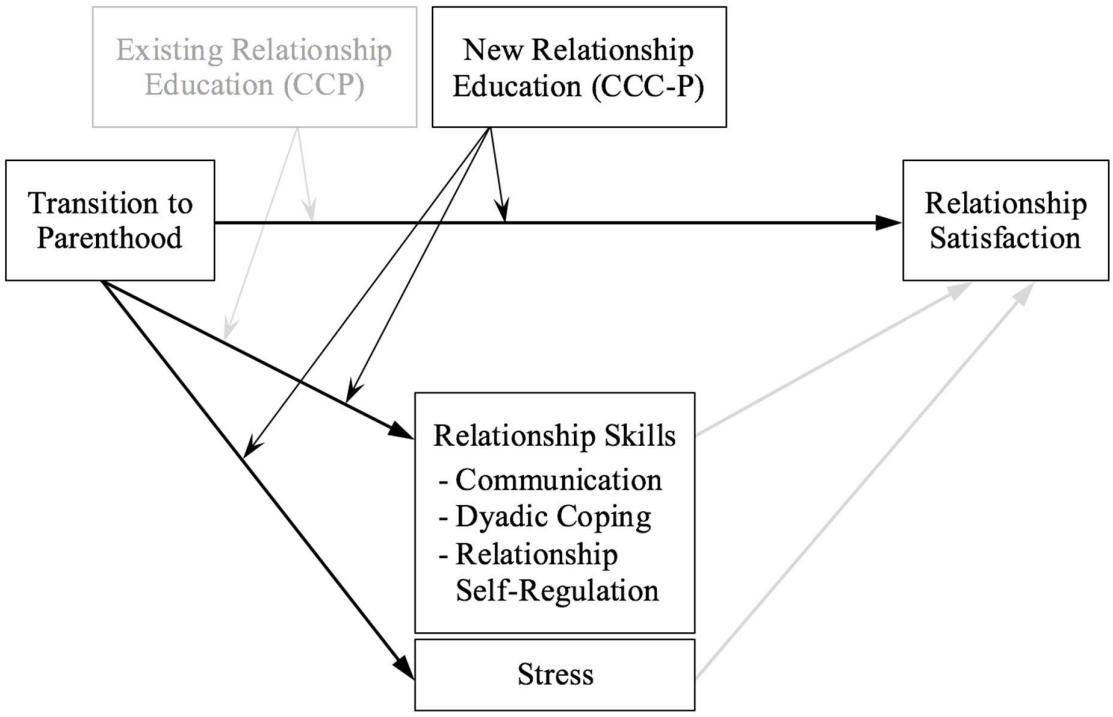

Figure 5: Conceptual Framework of Study III

6. Study I: Couple Communication and Relationship Satisfaction in Couples Making the Transition to Parenthood[2]

Abstract

Objective: Changes in couple communication are often presumed to mediate the effects of couple relationship education (RE), but research testing this presumption had yielded inconsistent results. The current paper tested a moderated mediation hypothesis that couple communication change only predicts relationship satisfaction in couples at high risk for future relationship problems. ***Method:*** Two hundred and fifty couples expecting their first child were randomly assigned to the Couple CARE for Parents RE program or a control condition. Communication was assessed before and after RE, and relationship satisfaction was assessed before RE, after RE and at follow-up through to 2.5 years after the birth. ***Results:*** As predicted, high-risk couples had more negative communication before RE. However, changes in couple communication did not mediate the effects of RE on couple relationship satisfaction. ***Conclusions:*** There is a need for future research to test the extent to which non-specific factors and/or changes in multifactorial indices of risk mediate the effects of RE.

[2]The conduct of this research was supported by a National Health and Medical Research Council of Australia grant 326321 "A randomized controlled trial of a couple-based program for the transition to parenthood" to W. Kim Halford and Debra Creedy.
A similar version of this chapter has been resubmitted to the Journal of Family Psychology.

Rachel: “It was the communication stuff that helped us the most.” Robert (Rachel’s partner): “Yeah, it helped us to better manage the tough things … to talk through how to manage when our baby cries, or what to do when Rachel gets really tired.”

The above comments were made by a couple describing their reflections about undertaking the relationship education program Couple CARE for Parents (CCP). As we document in this paper, the couple’s comments reflect a common belief of couples who undertake relationship education, and a belief also held by many psychologists who develop and provide that education, that improving communication helps couples manage challenging stressors. In the current paper we tested the proposition that enhancing couple communication mediates the effects of relationship education for couples making the transition to parenthood.

The Transition to Parenthood

The transition to parenthood is challenging to many couples (Kluwer, 2010). On the one hand, the birth of a child is often joyous (Gottman & Notarius, 2000), and at the same time there are a number of stressful changes that accompany parenthood (Halford, Petch, & Creedy, 2015). A meta-analysis of longitudinal studies of couples becoming parents found mean relationship satisfaction shows a medium to large effect size decline across the first two years after the birth of the couple’s first child (Mitnick et al., 2009).

The mean decline in relationship satisfaction in new parents is likely attributable to the many changes parenthood brings. First, the birth of child adds about 40 hours of extra work per week to the couple household (Halford et al., 2015), and on average women do about 75 to 80% of that extra work (e.g., Bianchi et al., 2000). Sleep deprivation of parents with young children is almost universal. Parental sleep is interrupted by the baby’s needs, and pleasurable activities like meeting friends, participating in exercise and sport, and time as a couple decrease as the time demands of infant care reduce the available time for these

activities (Claxton & Perry-Jenkins, 2008). The reduced couple time is often associated with a decline in perceived relationship intimacy (Claxton & Perry-Jenkins, 2008; Dew & Wilcox, 2011; Kluwer, 2010), and there is often a deterioration in couple communication and an increased rate of relationship conflicts (Curran, Hazen, Jacobvitz, & Sasaki, 2006; Kluwer & Johnson, 2007).

Some challenges associated with the transition to parenthood tend to diminish over time. For example, across the first year of life most infants gradually increase their longest sustained period of sleep from the 2 to 4 hours typical of newborns to around 7 to 8 hours (Henderson et al., 2011), and this means that sleep interruption and deprivation for parents usually declines. Similarly, most couples resume sexual activity at some point between four weeks and 10 weeks after the birth, and the frequency and enjoyment of intercourse increases for most couples across the first year of parenthood (Abdool, Thakar, & Sultan, 2009; Hipp et al., 2012).

Couples vary a lot in the extent to which the transition to parenthood is associated with a decline in relationship satisfaction. In other words, there is considerable variability around the mean decline in relationship satisfaction (Belsky & Rovine, 1990). About 60 – 70 % of young parents report some decline in relationship satisfaction, while about 30 % show no decrease in relationship satisfaction (Doss, Rhoades, Stanley, & Markman, 2009b; Mitnick et al., 2009). This variability raises the question: what accounts for the variable impact of parenthood on couples?

Research has identified a number of risk factors that predict deteriorating relationship satisfaction in all couples, and which seem likely to influence new parent couples as well. Common risk factors that increase the likelihood of relationship distress are certain personality traits, such as high neuroticism (DiLillo et al., 2009), divorce in the partner's family of origin (Doss, Rhoades, Stanley, & Markman, 2009b), social disadvantage (Cutrona

et al., 2011), stress, low level of dyadic coping (Bodenmann, Pihet, Shantinath, et al., 2006) and interpartner violence (IPV; Rogge & Bradbury, 1999). Some of these risk factors might have a particularly pronounced effect on new parents. For example, given the additional expenses incurred after having a child, low male partner income (Doss, Rhoades, Stanley, & Markman, 2009b) and financial stress (Amato, 1996; Conger et al., 1999) are likely to be particularly challenging for couples. For couples becoming parents, there are some risk factors specific to that transition such as having an unplanned pregnancy (Cox et al., 1999), or birth complications (Halford et al., 2015).

Relationship Education (RE) for Transition to parenthood

Given that many couples becoming parents experience a decrease of relationship satisfaction, it has been suggested that across the transition to parenthood couples might benefit from relationship education (RE) to provide key knowledge and skills to better manage the transition (Cowan & Cowan, 2014). A number of RE programs have been evaluated for their effects with new parent couples (Cowan & Cowan, 2014). The content varies somewhat, but most cover helping the couple develop shared realistic expectations about parenthood, discussing the division of parenting tasks, couple communication, problem solving and enriching the couple relationship, and some include content on managing infant care (Halford et al., 2015).

A meta-analysis of RE for couples making the transition to parenthood found a small mean effect size improvement in relationship satisfaction (Pinquart & Teubert, 2010). There is considerable variability in findings across studies, some studies found no effect of RE on satisfaction at all (Feinberg et al., 2010; Trillingsgaard et al., 2012; Wood et al., 2012), some found effects for mothers' but not fathers' satisfaction (Doss, Cicila, Hsueh, Morrison, & Carhart, 2014; Halford, Petch, & Creedy, 2010), and others found quite large effects for couples – but the effect was selective for high-risk couples (Petch, Halford, Creedy,

&Gamble, 2012). The last finding that some high-risk new parent couples might show particular benefit from RE is consistent with the finding on RE with couples not becoming parents that high-risk couples show larger gains in satisfaction (Barton, Futris, & Bradley, 2014; Halford, Sanders, & Behrens, 2001), and improve more their relationship skills than low-risk couples (Bodenmann et al., 2014).

Mediators of RE Effects

A key target of RE for couples becoming parents has been couple communication (Halford et al., 2015). This focus of RE is not specific to new parents, almost all RE focuses on improving couple communication (Berger & Hannah, 2013). Numerous studies show RE enhances new parents' communication (e.g., Halford et al., 2010; Petch et al., 2012), which is consistent with numerous other studies with couples not becoming parents showing that RE enhances communication skills (Hawkins et al., 2008).

The focus of RE on couple communication reflects a social learning perspective that couple's communication influences their capacity to manage life stressors, and that enhancing communication is expected to enhance relationship satisfaction (Halford et al., 2008). Moreover, couples who have completed RE that includes communication training report they believe communication is the most important aspect of RE (Petch et al., 2012a; Stanley, 2001)

Research testing the proposition that improved communication mediates the effects of RE on relationship satisfaction has produced mixed findings. Some studies found RE did not change couple communication but still produced a significant increase in couple relationship satisfaction (e.g., Halford, Moore, et al., 2006). Stanley, Rhoades, Olmos-Gallo and Markman (2007) found that, RE did enhance communication and, as expected, reductions in negative communication by men and women after RE predicted future relationship satisfaction. Similarly, Bodenmann, Bradbury, and Pihet (2008) showed in a 2-year-study

that increases in positive communication by women, and decreased negative communication by men, mediated the effects of RE. In contrast, wives' increase in positive communication predicted an increase in marital distress. In a 5.5-year follow-up of 39 newlywed couples who received RE, the expected association was found between declines in husbands' negativity and increased likelihood of sustained relationship satisfaction, but wives' increases in positive communication predicted a paradoxical increased likelihood of marital distress for themselves and for their partners, while decreases in wives' negative behaviors were unrelated to later marital outcomes (Schilling et al., 2003). Baucom, Hahlweg, Atkins, Engl, & Thurmaier (2006) partially replicated this finding in a 5 year follow-up study of 77 couples who found deteriorating satisfaction in the 12% of couples who showed the most increase in positive communication after PREP. In the largest study yet done of couple communication as a mediator of RE effects, Williamson, Altman, Hsueh & Bradbury (2015)found that RE improved couple communication for some couples, but that communication after RE was unrelated related to future relationship satisfaction.

One plausible explanation for the inconsistent findings about the association of changes in couple communication after RE and future relationship satisfaction is that RE mediation might be moderated by pre-intervention levels of communication (Halford & Bodenmann, 2013). For example, consider couple 1 who start RE with a low level of negative communication and do not change their negative communication after RE, and therefore have a small change score. Consider also couple 2 who start RE with highly negative communication that is reduced by RE but is still higher after RE than couple 1 was before RE, and have quite a large change score. Using the change score to predict future relationship satisfaction, we are testing the hypothesis that couple 2 would have higher relationship satisfaction than couple 1 because they changed more than couple 1. However, it is more likely that the communication after RE, rather than the extent of change, influences future relationship satisfaction (Wilson & Halford, 2008). If the focus were on

communication after RE we would predict couple 1 would have higher satisfaction than couple 2. In summary, the inconsistent findings on whether change in communication mediates the effects of RE on satisfaction might reflect sample differences in couple communication before RE. Only couples with poor communication (i.e. high negative and low positive communication) before RE are likely to show that positive changes in communication mediate effects of RE on relationship satisfaction.

A second possible explanation for the inconsistent findings on communication mediating the effects of RE is that much RE has been offered to couples with high initial satisfaction, who show limited change in relationship satisfaction across time, even in control conditions (Hawkins et al., 2008). If the dependent variable is the slope of the trajectory of relationship satisfaction, and the mean change and variability around that change are small, then power to detect an association a mediation of communication on the trajectory of satisfaction will be low, which could generate inconsistent findings. For example, Williamson and colleagues (2015) found no association between RE communication change and relationship satisfaction trajectory in a large sample of couples, but the effect size of RE on satisfaction was small.

Aims of the Current Study

While communication skills training is central to most RE – including that offered to new parents – there are mixed findings on whether communication mediates the effects of RE on couple satisfaction. It is important to identify mediators of RE as that could facilitate refinement of intervention program content. So, the aim of the current study was to test a moderated mediation model of the effects of communication on relationship satisfaction.

We did secondary analyses on a randomized controlled trial of CCP reported by Petch and colleagues (2012a). This was a good study to test the moderated mediation hypothesis as the effects of RE among high risk couples was large, and there was a larger sample of

couples in this study than in most randomized controlled trials of RE that have tested mediation effects. We first hypothesized that there would be a change in communication due to the RE (Hypothesis 1). The previous paper reported on the effects of CCP in the trial, including the effects on negative communication (Petch et al., 2012). In the current paper we also examined effects on positive communication. Secondly, we tested if the communication that couples exhibited after RE, or the change in communication across the course of RE, predicted the slope of relationship satisfaction over time in high risk couple (Hypothesis 2). For testing this second hypothesis we focused on high risk couples as they are the ones expected to improve problematic communication, and to benefit most from the RE. Testing these hypotheses with couples making the transition to parenthood, who show a medium to large mean decline in satisfaction, the effect size of the benefit of effective RE can be expected to be large. This provides good power to test the moderated mediation hypothesis.

Method

Participants

Participants were $N = 250$ couples who initially were approached while attending antenatal services at one of five maternity hospitals in southeast Queensland, Australia. Participants were asked to take part in an evaluation of programs supporting couples across the transition to parenthood. Inclusion criteria for the study were: (a) the woman was 20 to 35 weeks pregnant with her first child, and not expecting a multiple birth; (b) both partners had a Dyadic Adjustment Scale (DAS; described below) score of 90 or more (as highly distressed couples would likely require more intensive support than available in RE); (c) neither partner had children from a previous relationship; and (d) both partners spoke and wrote English.

125 couples were randomly assigned to each CCP or BAP. There was no difference in the rate of drop out from the two conditions, $\chi^2(1, N = 250) = 2.16$ $p = .142$. The 7% dropout

(18 couples) happened because of medical complications (n = 6), relocation interstate or overseas (n = 5), being too busy (n = 3) and no reason given (n = 4). Separation rates were similarly low in both conditions; by the 2-year follow-up 6/113 (5%) of CCP couples and 10/119 (8%) of BAP couples separated, χ^2 (1, N = 250) = 1.07 p =.301 At the 2-year follow-up, about 80% of intact couples in both conditions provided data (n = 88/107, 82% of CCP couples and n = 87/109, 80% of BAP couples).

Men's mean age was 30.6 years (SD = 5.8) and women's mean age was 28.7 years (SD = 4.9). The mean household annual income was AUD $ 85,977 (SD = AUD $21,074; about U.S. $86,379). Two-thirds of the couples (65%) were married and the rest were cohabiting, which is very similar to the proportion of the population of first time parents who are married in Australia (Laws, Abeywardana, Walker, & Sullivan, 2007). Relative to the Australian population (Australian Bureau of Statistics, 2006b), highly educated people were overrepresented in the current sample with one third of the men and 43 % of the women having a university qualification. Nonetheless, 16 % of the women and 21% of the men had not completed 12 years of schooling and therefore the representation of couples with low education attainment was substantial. Nine percent of the women and 15% of men had a non-English-speaking background which is less compared than the Australian population of 33% (Australian Bureau of Statistics, 2006). One third of couples reported the pregnancy was unplanned, which is somewhat lower than reported frequency of unplanned pregnancy in the Australian population (51%) (Michelson, 2007).

Measures

Partners completed a battery of self-report measures on their relationship satisfaction, individual adjustment and parenting stress before the birth and commencing the interventions, approximately 4 months after the birth and after completing the intervention,

and at follow-up assessments16 and 28 months after the birth. Here we describe only the measures relevant to the current study.

Relationship satisfaction. Participants completed the 32-item DAS (Spanier, 1976), self-report measure of relationship satisfaction 3 months before the birth (T1), 4 months postpartum (T2), 16 months (T3), and 28 months postpartum (T4). Higher scores reflect higher relationship satisfaction, and scores below 98 indicate relationship distress (Spanier, 1976). Measurement reliability was high for both genders at all assessments ($\alpha \geq .82$).

Interpartner Violence. Each partner completed the Conflict Tactics Scales-Revised (CTS2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996) at pre-assessment, which is a 72 item widely used measure of IPV in intimate relationships (Newton, Connelly, & Landsverk, 2001). We categorised couples as having IPV if either partner reported any act (self- or partner-perpetrated) of physical violence in the last 12 months. This was used as one of the six assessed indicators of risk.

Couple communication. At pre-intervention about 3 months before the birth, and post-intervention couples about 4 months after the birth, couples were videotaped discussing a current topic of disagreement in their relationship for 10 min. The videotapes were rated by research assistants who were blind to the couples' assigned condition using the Brief Kategoriensystem fuer Partnerschaftliche Interaktion (Brief-KPI; Halford et al., 2001). The Brief KPI is sensitive to changes in communication (Halford et al., 2001) it has been widely used in coding couple interactions (Sanders, Halford, & Behrens, 1999). After a 30 hr coding training of Brief KPI coders yielded a high (ICC $\geq$ 0.80) interrater reliability for all codes, expect for male negative affect which was acceptable (ICC = 0.73) in a random sample of 25% discussions. Coders coded the presence of 3 negative communication behaviors (conflict, invalidation, and negative (nonverbal) affect) and 3 positive communication behaviors (discussion, validation, and positive (nonverbal) affect)in each 30-

s interval of interaction (see Halford, Petch, et al., 2010 for definitions of the codes). Scores of the percentage of intervals that contained each behavior were calculated for the male and female partner separately.

Risk. A number of risk factors predict declining future couple relationship satisfaction (Halford, 2011) including: parental divorce in (1) the woman's or (2) the man's family of origin; (3) lack of university education in either partner; (4) low annual household income (which we operationalized as AUD $50,000 or less of the current study, which is 1 SD below the Australian population mean for two parent households with children); (5) unplanned pregnancy; and (6) presence of interpartner violence (IPV). While risk factors 1-5 were assessed during an interview, IPV was measured by completed Conflict Tactics Scale – Revised (Straus et al., 1996) at pre-assessment. By dichotomizing every single risk factor (0 = absent, 1 = present) and summarizing all of them a continuous index of risk for each couple was created. As the correlations between the factors were not greater than $r = .20$ and were mainly not reliably different from zero it should not be assumed that the cumulative index of risk represents a single latent factor. Nonetheless it is common in epidemiological research to use a cumulative risk factor as a predictor (Rauer, Karney, Garvan, & Hou, 2008). Couples had a mean of 1.95 ($SD = 1.25$, min. 0 to max. 6) risk factors.

Intervention

Couple Care for Parents (CCP). Couple Care for Parents (CCP) is a 6 unit program that focuses on the couple relationship and parenting, the details of which are described in (Petch et al., 2012a). In brief, CCP teaches knowledge and skills about couple relationships with a focus on the needs of new parents (e.g., communication about parenting expectations, conflict and stress management, mutual support in parenting roles, sustaining caring behavior and intimacy toward the partner as a new parent), and infant care and parenting (e.g., developing shared and realistic expectations about co-parenting; sensitive and

responsive parenting; and managing common infant care difficulties like sleeping, feeding and crying). Most of the program was done in the couples' own home, except unit 1 that was an antenatal face-to-face workshop run for small groups of 3 to 5 couples. Unit 2 and Unit 3 were home visits by a midwife educator taking 1.5h each. Unit 2 was delivered when the woman was about 8 months pregnant and unit 3 about two weeks after the birth of the child. Units 4-6 were done as self-directed learning with couples having a workbook describing structured exercises for the couple to do together to implement key ideas from the program in their relationship. Each of units 4 to 6 included a 30 – to 45 – min telephone from a midwife educator who reviewed the exercises and helped the couples apply the knowledge and learned skills in their relationship.

Becoming a Parent Program (BAP). BAP was a version of the available perinatal care in Australia, which we conceptualized as an optimized treatment-as-usual control condition. BAP involved a series of 5 telephone calls to the women focused on topics that have been identified as topics of interest to new mothers, including general infant care, growth and development, birth expectations and managing breastfeeding, sleep and crying (Bryan, 2000). Similarly to the CCP, guidebooks were provided with notes on each topic. The mothers got one telephone call before the birth and four calls postnatal, each of approximately 45 min duration. In contrast to the CCP-condition, fathers were not involved, there was no specific focus on the couple relationship, or couple relationship skill training.

Procedure

About one week after recruitment, and approximately 3 months before the expected birth of the child, the couple was visited by a research assistant at their home. During that visit each partner completed the pre-intervention self-report assessments. The couple then had a 10-min discussion about an issue they disagreed about. The research assistant helped the couple to identify a topic of current disagreement. To commence the discussion the

research assistant turned on a portable video camera, instructed the couples to “discuss the issue as they normally would” and then left the room, returning after 10 mins.

Couples were randomly assigned using a random number table by a senior research assistant after completing the pre-intervention assessment. Once the intervention was finished 4 months after birth (T2), couples completed the post-intervention self-report assessments and a second couple discussion following the same procedure as for the pre-intervention assessment. Approximately 16 months and 28 after birth, self-report measures were individually sent to each spouse including a reply-paid envelope for the return of the envelopes. Two additional prompts by telephone were made to encourage those partners who had not returned the self-report measures to complete the follow-up assessments.

Data Analysis

To test Hypotheses 1 about the effect of CCP relative to the control on couple communication we conducted separate analyses for each of three indices of positive and each of three indices of negative communication. In each case the analysis was a sex-specific multi-level model in which repeated observations across time (pre-intervention and post-intervention) formed level 1 and couples formed level 2. The sex specific analysis used dummy variables for gender to estimate the gender-specific intercepts (pre-intervention means) and the change from pre- to post-intervention (Bolger & Laurenceau, 2013). Time was entered as dummy variable (pre-intervention = 0, post-intervention = 1), as was condition (0 = BAP control, 1 = CCP). The equation describing the model is as follows.

$$\text{Communication}_{ij} = \beta_0\,(\text{female}_j) + \beta_1\,(\text{male}_i) + \beta_2\,(\text{female*time}_{ij}) + \beta_3\,(\text{male*time}_{ij}) + \beta_4\,(\text{female*CCP}) + \beta_5\,(\text{male*CCP}_i) + \beta_6\,(\text{female*CCP*time}_{ij}) + \beta_7\,(\text{male*CCP*time}_{ij}) + \\ + u_{0i} + e_{0ij}$$

$Communication_{ij}$ is the communication behavior for individual i at time j. The β_0 and β_1 coefficients are the intercept (pre-intervention score) for $female_i$ and $male_i$ in the BAP (control group) group. The β_2 and β_3 coefficients, respectively, represent change in communication from pre-intervention for $female_i$ and $male_i$ in the BAP condition at time j, which is the post-intervention. The β_4 (female*CCP) and β_5 (male*CCP) coefficients represent, respectively, the difference in $female_i$ and $male_i$ communication intercepts in the CCP relative to BAP conditions. The β_6 (female*CCP*time) and β_7 (male*CCP*time) coefficients, respectively, are the difference between $female_i$ and $male_i$ change in communication between the CCP and BAP conditions from pre-intervention to post-intervention. The u_{0j} and u_{1j}represent the error terms at the level of couples and time, respectively. In subsequent models we also included risk and its respective interaction terms (model 2 and 3), to examine whether communication changes less in CCP for high- than low-risk couples.

In order to test Hypothesis 2 predicting the trajectory of relationship satisfaction from couple communication we conducted separate sex-specific multilevel models for each of the three negative and three positive communication behaviors using MLWin. Each analysis was a two-level model in which four assessments across time formed level 1, and couples formed level 2. Time was centered at the time of birth and expressed as years since the birth (pre-intervention = -.25, post-intervention = .30, first follow-up= 1.3, second follow-up = 2.3). The sex specific analysis used dummy variables to estimate the gender-specific intercepts (means at birth) and the slope of the trajectory of satisfaction change from pre-intervention through to the final up, expressed as scale points change per year (Bolger & Laurenceau, 2013). The risk index was entered as a continuous variable. We grand mean centered communication and risk to facilitate interpretability and avoid multicollinearity (Aiken & West, 1991). The equation we used was as follows.

$$\text{Relationship satisfaction}_{ij} = [\beta_0(\text{female}_j) + \beta_1(\text{male}_j) + \beta_2(\text{female}*\text{years}_{ij}) + \beta_3(\text{male}*\text{years}_{ij})] + [\beta_4(\text{female}*\text{female-communication}_i) + \beta_5(\text{male}*\text{male-communication}_i) + \beta_6(\text{female}*\text{male-communication}_i) + \beta_7(\text{male}*\text{female-communication}*\text{year}_{ij}) + \beta_8(\text{female}*\text{female-communication}*\text{year}_{ij}) + \beta_9(\text{male}*\text{male-communication}*\text{year}_{ij}) + \beta_{10}(\text{female}*\text{male-communication}*\text{year}_{ij}) + \beta_{11}(\text{male}*\text{female-communication}*\text{year}_{ij})] + [u_{0i} + e_{0ij}]$$

Relationship satisfaction$_{ij}$ is the couple relationship satisfaction for couple i at time j. The first set of square brackets is the unconditional growth model. This consists of the β_0 (female$_i$) and β_1 (male$_i$) coefficients, which represent female$_i$ and male$_i$ intercepts (relationship satisfaction at the time of birth), respectively. The β_2 (female*years$_{ij}$) and β_3 (male*years$_{ij}$) coefficients represent the change in satisfaction for female i at time j, and male i at time j, respectively. The second set of square brackets are the actor and partner effects of each partners' communication. The β_4 (female*female-communication$_i$) and β_5 (male*male-communication$_i$) coefficients represent the actor effect of one's own communication on the intercept of satisfaction for women and men, respectively. β_6 (female*male-communication$_i$) + β_7 (male*female-communication*year$_{ij}$) coefficients represent the effect of the other partner's communication on the intercept of satisfaction for women and men, respectively. β_8 (female*female-communication*year$_{ij}$) and β_9 (male*male-communication$_i$*year$_{ij}$) coefficients represent the actor effect of one's own communication on the change of satisfaction in scale points for female i at time j, and male i at time j, respectively.β_{10} (female*male-communication$_i$*years$_{ij}$) and β_{11}(male*female-communication$_i$*year$_{ij}$) coefficients represent the effect of the partner's communication on the change of satisfaction in scale points for female i at time j, and male i at time j, respectively.

Results

Table 1 presents descriptive statistics and correlations for both intervention groups. Correlations between the predictive variables are generally small to medium. Invalidation and negative affect correlated stronger with the other variables. As expected, negative aspects of communication correlated negatively with positive aspects of communication.

Change in Communication

Table 2 shows the effects of CCP and risk on the changes in communication. Communication becomes more negative and less positive across time in the control condition for both genders. Risk is associated with more initial negative communication, and less positive communication, before RE in both genders (except for validation in men). CCP attenuates deterioration in communication across time for some behaviors, on invalidation, conflict and discuss for men, and on validation for women.

Contrary to expectations, risk did not moderate the effects of CCP on communication. The interaction of condition by risk was only significant for one of 24 coefficients (CCP had more effect on male invalidation in high-risk than low-risk couples). This single significant effect might well be a type 1 error given the number of test of moderation undertaken.

Communication Predicting Relationship Satisfaction

Our second aim was to test whether couples' communication after RE, or the change in their communication predicted the trajectory of relationship satisfaction. As shown in Table 3, relationship satisfaction decreased significantly over time for men and women. In no instance does RE change in communication predict either intercept or slope of relationship satisfaction. In contrast, some aspects of the T2 (Post –RE) communication do predict the slope of relationship satisfaction. Less decline in male satisfaction across time is predicted by male validation, male positive affect, low male negative affect, and low female conflict; less decline in female satisfaction is predicted by low male conflict. Thus, some

post RE communication behaviors are predicting satisfaction trajectory, but the change in communication behaviors from pre-RE to post RE are not.

Discussion

This study evaluated the effects of relationship education (RE) on communication, and tested whether changes in communication mediate the effects of RE on relationship satisfaction. In the control couples, communication became more negative and less positive across the transition to parenthood. High risk was associated with more negative and less positive couple communication at presentation for RE. The CCP RE program attenuated some of the deterioration of couple communication across the transition to parenthood. However, risk did not moderate the effects of CCP on communication. Contrary to prediction, high-risk couples' changes in communication from pre-RE to post-RE did not predict the trajectory of couples' satisfaction. However, some aspects of communication after RE (validation, conflict, positive affect and negative affect) did predict the trajectory of satisfaction.

Mediation of Relationship Education Effects

In summary, in the current study communication skill acquisition did not mediate RE effects on relationship satisfaction. In one important way the current finding extends prior research, which had found mixed - and often null - findings as to whether enhanced communication mediated RE effects on couple satisfaction (Baucom et al., 2006; Halford et al., 2010; Schilling et al., 2003; Stanley et al., 2007). The current tested whether there might be a specific mediation effect of communication among high-risk couples, who were expected to have more negative communication than low-risk couples on presentation for RE. As predicted, risk was associated with less positive and more negative communication at presentation, replicating a few other studies who had found the same association (Halford et al., 2001; Williamson et al., 2015). However, the change of couple communication in

high-risk couples across the course of RE did not predict future trajectory of relationship satisfaction. The current findings contradict the moderated mediation hypothesis proposed by Halford and Bodenmann (2013).

The inconsistent and often null findings of the association of RE-based communication change with future couple relationship satisfaction has led some authors to question the relevance of couple communication in RE (Johnson & Bradbury, 2015). As noted in the review by Halford and Bodenmann (2013), the vast majority of trials compare RE with a wait list control, and nonspecific effects might account for RE effects. Consistent with this possibility, Rogge, Cobb, Lawrence, Johnson, and Bradbury (2013) found two evidence-based RE programs had similar effects on relationship satisfaction and stability as having couples watch relationship themed movies and discuss those movies with their partner. Perhaps couples committing to do something to enhance their relationship, or at least anything that seems plausible to the couples, can enhance the couple relationship. Alternatively, perhaps the regular discussions couples have about their relationship that form part of all RE, regardless of the specific content of the RE, enhances the relationship satisfaction. Future RE research has to test for these possible non-specific mediators of RE effects.

In the current study changes in communication were not a common mediational pathway for the effects of RE on couple satisfaction. However, lack of mediation does not mean that communication skills training is irrelevant and should be dropped from RE. Participants completing RE consistently rate communication as the most important part of RE (Petch et al., 2012; Stanley, 2001). The positive expectations of communication enhancement might in itself enhance couple satisfaction, even if the specific changes in communication behaviors do not mediate change in satisfaction. Alternatively, if couples use communication training during RE to negotiate change successfully (e.g. more equitable

sharing of parenting or household chores), that might produce an effect on couple satisfaction even if the communication behavior changes after RE do not mediate long-term relationship satisfaction.

In the current study, two of the four aspects of communication after RE that predicted future relationship satisfaction were not changed by RE (positive and negative nonverbal affect). A long–established finding is that couple non-verbal affect is less influenced by demand characteristics of the assessment situation than verbal communication (Vincent, Friedman, Nugent, & Messerly, 1979). Changes in observed couple verbal behaviour after RE might reflect, at least in part, implicit demand characteristics of the assessment situation. In other words couples feel implicit pressure to use the verbal behaviors taught in the intervention, and observed changes after RE in verbal communication might be artefacts of the assessment situation (Heyman, 2001). In contrast, demand characteristics have less impact on nonverbal behavior, and the lack of change in nonverbal affect might reflect that RE had little effect on couple communication outside the assessment situation. New technologies like mobile telephones with voice activated recording are opening up the possibility of sampling day-to-day couple communication, which might give a more accurate assessment of changes in couple communication after RE.

There is also the possibility that RE based communication change is only one of many potential mediators of RE effects. Most RE has multiple targets including shared fun activities, developing shared and realistic expectations, sexuality and mutual support, and dyadic coping (Halford, 2011), based on the rationale that each of these factors have been shown to predict future relationship satisfaction (Halford & Pepping, in press). Multi-component RE programs might enhance couple satisfaction by changing risk profiles across multiple risk factors, with the effect of any particular risk factor averaged across couples being modest. Future research should seek to assess changes in couples' risk profiles to

establish if such changes might mediate RE effects. In assessing mediators it is important to focus upon mediators likely to be modified by RE (e.g., dyadic coping, couple communication, relationship expectations), rather than upon risk factors that are unlikely to change as a result of RE (e.g. relationship history, social disadvantage).

Finally, the lack of clear demonstration of the mediators of RE effects needs to be considered in the context of research on mediators of effective psychological interventions more generally. Kazdin (2008) notes that across the whole field of clinical psychology, the mediators of efficacious psychological interventions have proven difficult to establish.

Limitations

The current study had a large sample size relative to most trials of RE, and the effect size of RE with the high risk couples was large (Petch et al., 2012a). Despite these advantages, power to detect interactions of couple communication change by trajectory of relationship satisfaction was modest, given the number of high risk couples in the CCP and BAP conditions. Small effect size associations between communication change and relationship satisfaction trajectory might have been missed.

Context might well moderate the effects of RE for new parents, and the generalizability of the current findings to other contexts needs to be assessed. The current sample of Australian couples was diverse with respect to socio-demographics but skewed toward better educated and more affluent couples; rates of accessing antenatal care are high making, and most employed women in Australia are eligible for three months paid maternity leave, making recruiting couples for RE before birth, and engaging couples after birth feasible (Halford et al., 2015). An ongoing replication of the current study in Switzerland shared a number of the characteristics of the current study: average couple incomes were diverse but tended to be high, attendance of antenatal education was high, paid maternity leave is widely available in Switzerland, and recruitment of couples before birth for RE and

retention after birth was feasible (Anderegg, Leuchtmann, Halford, & Bodenmann, 2016). In contrast, some recent trials of RE in the US were with low income couples, who most often did not access antenatal care, who had little or no access to paid maternity leave, and who were recruited after the birth and showed high rates of attrition form the RE (e.g., Wood, Moore, Clarkwest, & Killewald, 2014). Perhaps RE can only work in context where social policy provides certain basic levels of support for new parent couples like easy access to antenatal care and maternity leave.

Conclusion

Changes in couple communication across the course of RE did not mediate RE effects on couple relationship satisfaction trajectory, and it seems unlikely that communication change is a universal mediator of RE effects. Future research needs to control for the role of non-specific effects of RE, to assess change in couple communication with methods less influenced by demand characteristics, and to examine changes in multi-factorial risk indices as potential mediators of RE effects.

Table 1. *Means, Standard Deviations and Correlation of Communication Variables (N = 250 Couples)*

Variables	M	SD	Correlation						
			a.	b.	c.	d.	e.	f.	g.
a. Time	0.45	0.50	1						
Negative Communication									
b. invalidation	56.29	25.36	0.11	1					
c. conflict	11.42	16.00	0.01	0.35	1				
d. neg. affect	29.16	31.03	0.08	0.50	0.46	1			
Positive communication									
e. validation	61.87	20.64	-0.09	-0.31	-0.42	-0.46	1		
f. discuss	51.74	21.22	-0.06	-0.40	-0.21	-0.31	0.18	1	
g. pos. affect	87.45	21.64	-0.08	-0.42	-0.37	-0.80	0.42	0.32	1

Table 2. *Effects of Relationship Education on Communication (N = 250 Couples)*

		Negative Communication											
		Invalidation				Conflict				Negative Affect			
Effects		Est.	*SE*	*z*	*p*	Est.	*SE*	*z*	*p*	Est.	*SE*	*z*	*p*
Effects of CCP													
Intercept	F	48.30	2.23			11.28	1.62			25.41	2.92		
	M	53.90	2.26			8.76	1.27			20.90	2.71		
Time	F	**7.03**	**2.47**	**2.85**	**0.004**	3.17	1.85	1.71	0.087	**9.68**	**3.46**	**2.80**	**0.005**
	M	**12.52**	**2.34**	**5.35**	**< .000**	1.90	1.59	1.20	0.230	**7.56**	**3.01**	**2.51**	**0.012**
CCP	F	2.75	3.21	0.86	0.390	1.47	2.33	0.63	0.529	6.62	4.20	1.58	0.114
	M	**7.69**	**3.25**	**2.37**	**0.018**	*3.46*	*1.82*	*1.90*	*0.057*	**8.39**	**3.89**	**2.16**	**0.031**
CCP*Time	F	-3.98	3.53	-1.13	0.259	-2.07	2.65	-0.78	0.435	-5.00	4.96	-1.01	0.313
	M	**-11.05**	**3.35**	**-3.30**	**0.001**	**-6.10**	**2.28**	**-2.68**	**0.007**	-5.56	4.34	-1.28	0.201
Effects of Risk													
Intercept	F	42.65	3.22			6.67	2.72			15.35	4.24		
	M	45.16	3.22			5.93	1.86			8.71	3.84		
Time	F	4.32	3.68	1.17	0.242	2.16	2.78	0.78	0.435	6.34	5.13	1.24	0.215
	M	**11.96**	**3.46**	**3.46**	**0.001**	3.55	2.38	1.49	0.136	7.45	4.46	1.67	0.095
CCP	F	3.64	3.17	1.15	0.250	1.82	2.32	0.79	0.430	6.21	4.17	1.49	0.136
	M	**8.18**	**3.19**	**2.56**	**0.011**	**3.63**	**1.84**	**1.97**	**0.049**	*7.42*	*3.80*	*1.95*	*0.051*
CCP*Time	F	-4.74	3.59	-1.32	0.187	-1.97	2.72	-0.72	0.472	-5.80	5.01	-1.16	0.246
	M	**-11.61**	**3.38**	**-3.44**	**0.001**	**-5.88**	**2.33**	**-2.52**	**0.012**	-4.62	4.36	-1.06	0.289
Risk	F	**2.80**	**1.25**	**2.24**	**0.025**	**2.30**	**0.92**	**2.50**	**0.012**	**5.19**	**1.64**	**3.17**	**0.002**
	M	**4.46**	**1.25**	**3.57**	**< .001**	**1.46**	**0.72**	**2.03**	**0.042**	**6.44**	**1.49**	**4.32**	**< .001**
Risk*Time	F	1.54	1.45	1.06	0.289	0.49	1.10	0.45	0.653	1.78	2.02	0.88	0.379
	M	0.51	1.36	0.38	0.704	-1.03	0.94	-1.10	0.271	0.01	1.76	0.01	0.992
Effects of CCP and Risk													
Intercept	F	40.09	3.94			7.84	2.89			20.03	5.18		
	M	44.30	3.96			5.77	2.29			13.01	4.70		
Time	F	3.73	4.52	0.83	0.407	2.29	3.41	0.67	0.503	1.14	6.27	0.18	0.857
	M	**16.76**	**4.21**	**3.98**	**0.000**	2.38	2.92	0.82	0.412	8.03	5.48	1.47	0.142

		Negative Communication											
		Invalidation				Conflict				Negative Affect			
Effects		Est.	*SE*	*z*	*p*	Est.	*SE*	*z*	*p*	Est.	*SE*	*z*	*p*
CCP	F	9.21	5.87	1.57	0.116	-0.76	4.31	-0.18	0.857	-3.91	7.72	-0.51	0.610
	M	*10.03*	*5.85*	*1.71*	*0.087*	3.97	3.38	1.18	0.238	-1.73	6.95	-0.25	0.803
CCP*Time	F	-3.44	6.71	-0.26	0.795	-2.24	5.07	-0.44	0.660	5.44	9.32	0.58	0.562
	M	-2.93	6.22	-0.47	0.638	-3.37	4.32	-0.78	0.435	-6.01	8.10	-0.74	0.459
Risk	F	**4.15**	**1.73**	**2.40**	**0.016**	1.68	1.27	1.32	0.187	2.72	2.73	1.00	0.317
	M	**4.91**	**1.74**	**2.82**	**0.005**	1.55	1.00	1.55	0.121	**4.18**	**2.07**	**2.02**	**0.043**
Risk*Time	F	1.89	2.02	0.94	0.347	0.41	1.53	0.27	0.787	4.55	2.80	1.63	0.103
	M	-2.08	1.88	-1.11	0.267	-0.38	1.30	-0.29	0.772	-0.34	2.45	-0.14	0.889
CCP*risk	F	-2.81	2.49	-1.13	0.258	1.30	1.83	0.71	0.478	5.10	3.28	1.56	0.119
	M	-0.93	2.49	-0.37	0.711	-0.17	1.44	-0.12	0.905	4.63	2.96	1.56	0.119
CCP*risk*Time	F	-0.74	2.91	-0.25	0.803	0.17	2.20	0.08	0.936	-5.76	4.04	-1.43	0.153
	M	**5.36**	**2.70**	**1.98**	**0.048**	-1.31	1.87	-0.70	0.484	0.76	3.52	0.22	0.826
		Positive Communication											
		Validation				Discuss				Positive Affect			
Effects		Est.	*SE*	*z*	*p*	Est.	*SE*	*z*	*p*	Est.	*SE*	*z*	*p*
Effects of CCP													
Intercept	F	64.12	1.90			55.30	1.85			90.48	2.02	44.79	
	M	65.74	1.83			51.63	1.94			91.61	1.93	47.47	
Time	F	**-7.62**	**2.24**	**-3.40**	**< .000**	-3.19	2.32	-1.38	0.168	**-5.66**	**2.57**	**-2.20**	**0.028**
	M	**-6.12**	**2.26**	**-2.71**	**0.007**	**-7.27**	**2.43**	**-2.99**	**0.003**	-4.12	2.37	-1.74	0.082
CCP	F	-5.00	2.73	-1.83	0.067	2.64	2.65	1.00	0.317	-3.14	2.91	-1.08	0.280
	M	-0.52	2.63	-0.20	0.842	-4.78	2.79	-1.71	0.087	-5.32	2.78	-1.91	0.056
CCP*Time	F	**7.80**	**3.21**	**2.43**	**0.015**	1.81	3.32	0.55	0.582	1.40	3.68	0.38	0.704
	M	4.54	3.24	1.40	0.162	**7.76**	**3.47**	**2.24**	**0.025**	1.58	3.39	0.47	0.638
Effects Of Risk													
Intercept	F	68.43	2.73			63.10	2.68			96.21	2.96		
	M	67.02	2.70			56.64	2.77			97.33	2.81		
Time	F	-1.67	3.25	-0.51	0.610	**-8.08**	**3.43**	**-2.36**	**0.018**	-3.40	3.81	-0.89	0.374
	M	-3.26	3.37	-0.97	0.332	-5.40	3.59	-1.50	0.134	-2.37	3.52	-0.67	0.503

		Positive Communication											
		Validation				Discuss				Positive Affect			
Effects		Est.	*SE*	*z*	*p*	Est.	*SE*	*z*	*p*	Est.	*SE*	*z*	*p*
CCP	F	-4.82	2.69	-1.79	0.074	3.60	2.63	1.37	0.171	-2.94	2.91	-1.01	0.313
	M	-0.35	2.67	-0.13	0.897	-5.12	2.74	-1.87	0.062	-4.77	2.77	-1.72	0.085
CCP*Time	F	**7.49**	**3.17**	**2.36**	**0.018**	0.34	3.35	0.10	0.920	1.08	3.73	0.29	0.772
	M	3.76	3.30	1.14	0.254	6.78	3.52	1.93	0.054	1.03	3.45	0.30	0.764
Risk	F	**-2.27**	**1.06**	**-2.14**	**0.032**	**-4.16**	**1.04**	**-4.00**	**< .001**	**-3.07**	**1.15**	**-2.67**	**0.008**
	M	-0.68	1.04	-0.65	0.516	**-2.72**	**1.07**	**-2.54**	**0.011**	**-3.06**	**1.09**	**-2.81**	**0.005**
Risk*Time	F	**-3.10**	**1.28**	**-2.42**	**0.016**	**2.80**	**1.35**	**2.07**	**0.039**	-0.95	1.50	-0.63	0.529
	M	-1.35	1.33	-1.02	0.308	-0.88	1.42	-0.62	0.535	-0.88	1.39	-0.63	0.529
Effects of CCP and risk													
Intercept	F	0.18	0.61			60.69	3.27			92.10	3.61		
	M	*0.25*	*0.15*			53.75	3.40			95.04	3.42		
Time	F	-0.03	0.19	-0.16	0.873	-1.58	4.19	-0.38	0.704	-0.91	4.66	-0.20	0.842
	M	-0.16	0.16	-1.00	0.317	-3.75	4.41	-0.85	0.395	-6.60	4.30	-1.54	0.124
CCP	F	0.08	0.24	0.33	0.741	8.84	*4.88*	*1.81*	*0.070*	6.00	5.38	1.12	0.263
	M	-0.01	0.21	-0.05	0.960	1.08	5.02	0.22	0.826	0.13	5.05	0.03	0.976
CCP*Time	F	0.25	0.29	0.86	0.390	-7.25	6.22	-1.17	0.242	-4.36	6.93	-0.63	0.529
	M	0.18	0.16	1.13	0.259	3.24	6.53	0.50	0.617	10.24	6.37	1.61	0.107
Risk	F	-0.04	0.07	-0.57	0.569	**-2.89**	**1.44**	**-2.01**	**0.044**	-0.90	1.58	-0.57	0.569
	M	-0.03	0.07	-0.43	0.667	-1.19	1.49	-0.80	0.424	-1.85	1.50	-1.23	0.269
Risk*Time	F	**-0.18**	**0.09**	**-2.00**	**0.046**	0.93	1.87	0.50	0.617	-2.26	2.08	-1.09	0.276
	M	-0.07	0.06	-1.17	0.242	-1.75	1.97	-0.89	0.374	1.42	1.92	0.74	0.459
CCP*risk	F	-0.16	0.10	-1.60	0.110	-2.64	2.07	-1.28	0.201	-4.51	2.82	-1.60	0.110
	M	-0.01	0.09	-0.11	0.912	-3.14	2.14	-1.47	0.142	-2.49	2.15	-1.56	0.119
CCP*risk*Time	F	0.06	0.12	0.50	0.617	3.88	2.70	1.44	0.150	2.74	3.00	0.91	0.363
	M	0.00	0.00	0.00	1.000	1.79	2.83	0.63	0.529	-4.77	2.76	-1.73	0.084

F = female, M = male, CCP = Intervention CCP (couple care for parents) = 1 BAP = 0 (reference group), Time = 0 for pre intervention and 1 for post-intervention, Risk = sum of risk factors; significant effects are printed in bold.

Table 3. *Parameter Estimates of Relationship Satisfaction as a Function of Communication in High-Risk Couples (N =82)*

		Satisfaction		Effects of Communication on Satisfaction				
					Slope			
Communication		Intercept	Time	Intercept	Own	partner	Own	partner
Validation Δ	F	118.66 (1.26)	-7.40 (0.96) **		1.11 (0.91)	-1.19 (1.06)	1.12 (0.72)	-0.65 (0.81)
	M	118.67 (1.60)	-7.07 (1.24) **		-2.50 (1.34)	0.02 (1.15)	-1.05 (1.05)	1.64 (0.90)
Validation T2	F	118.97 (1.28)	-6.64 (0.97) **		**2.22 (1.07)***	**-3.08 (1.21)***	0.94 (0.83)	1.27 (0.94)
	M	119.55 (1.70)	-5.84 (1.26) **		2.07 (1.42)	-2.28 (1.62)	**2.13 (1.04)***	0.77 (1.21)
Invalidation Δ	F	118.97 (1.24)	-7.27 (0.97) **		-1.14 (1.11)	0.26 (0.86)	0.38 (1.00)	-0.93 (1.23)
	M	118.68 (1.61)	-6.82 (1.27) **		1.18 (1.57)	0.24 (1.80)	-1.01 (1.29)	-0.62 (1.62)
Invalidation T2	F	118.96 (1.47)	-6.66 (1.09) **		-1.83 (1.38)	0.12 (1.60)	0.17 (1.01)	-1.51 (1.20)
	M	120.13 (1.98)	-6.21 (1.39) **		-0.77 (1.80)	-1.41 (2.08)	-1.63 (1.28)	-1.23 (1.50)
Discuss Δ	F	118.49 (1.23)	-7.42 (0.92) **		0.09 (1.22)	-0.37 (0.95)	0.76 (0.93)	0.20 (0.77)
	M	118.33 (1.54)	-6.98 (1.20) **		-0.14 (1.52)	-1.76 (1.18)	0.86 (1.21)	0.43 (0.97)
Discuss T2	F	118.43 (1.47)	-7.59 (1.09) **		-0.67 (1.38)	0.12 (1.60)	0.17 (1.01)	-1.51 (1.20)
	M	118.58 (1.90)	-6.83 (1.39) **		-0.77 (1.80)	-1.02 (1.11)	-1.63 (1.28)	-1.23 (1.50)
Conflict Δ	F	118.29 (1.24)	-7.85 (0.96) **		0.50 (0.81)	-1.02 (1.11)	-0.40 (0.62)	-1.21 (0.85)
	M	119.53 (1.55)	-7.53 (1.23) **		-1.43 (1.02)	0.98 (1.41)	0.04(0.83)	-1.20 (1.11)
Conflict T2	F	119.10 (1.30)	-8.04 (0.95) **		-1.06 (1.00)	-0.88 (1.90)	-0.10 (0.72)	**-4.15 (1.44)***
	M	120.82 (1.52)	-7.89 (1.28) **		**-3.78 (1.12)****	0.15 (2.22)	0.45 (0.99)	**-4.40 (1.90)***
Positive Affect T2[1]	F	118.98 (1.23)	-7.29 (0.96) **		1.66 (1.21)	-0.64 (1.15)	0.37 (0.97)	0.19 (0.91)
	M	118.91 (1.60)	-6.40 (1.09) **		-1.57 (1.58)	0.86 (1.49)	**4.23 (1.10)****	-0.96 (1.00)
Negative Affect T2[1]	F	119.94 (1.26)	-7.33 (0.99) **		**-2.53 (1.29)***	-0.04 (1.37)	0.04 (1.05)	-0.33 (1.09)
	M	119.69 (1.68)	-6.05 (1.23) **		0.22 (1.73)	-2.26 (1.83)	**-3.00 (1.28)***	0.73 (1.32)

Note: *SE* are reported in brackets; significant effects are printed in bold; * $p < .05$. ** $p < .01$; Δ= change from pre-Re to post RE; T2 = communication after RE.[1]No change score for positive or negative affect were used as predictors as there was no significant change due to CCP.

7. Study II: The Course of Relationship Behaviors Across the Transition to Parenthood[3]

Abstract

Objective: This study evaluated the effects of the transition to parenthood on the relationship behaviors of communication, dyadic coping (DC) and relationship self-regulation (SR), and their association with relationship satisfaction. ***Method:*** One hundred and three couples becoming parents completed questionnaires five times during the transition to parenthood. Multilevel modelling was used to examine time effects for all the variables and associations between relationship behaviors and relationship satisfaction. ***Results:*** In both genders, positive relationship behaviors decreased over time, which was associated with a decline of relationship satisfaction. Aside from female negative communication, negative behaviors did not change significantly. However, negative behaviors were associated with relationship satisfaction throughout the transition of becoming parents. Furthermore, SR strategies and males' negative DC were associated with future male relationship satisfaction, while men's supportive DC predicted future female relationship satisfaction. ***Conclusions:*** Relationship behaviors decline across the transition to parenthood and enhancing those behaviors through relationship education programs might help couples successfully adjust to parenthood.

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The transition to parenthood is one of the most challenging experiences for couples (e.g., Nazarinia Roy, Schumm, & Britt, 2014). On the one hand, happiness, pride and joy are often reported after birth (Gottman & Notarius, 2000); on the other hand, stress and relationship distress often increase at the same time (Halford, Petch, & Creedy, 2015). About 30-40% of the couples becoming parents meet criteria for clinical levels of relationship distress in the first 18 months after birth (Cowan & Cowan, 2000), another 30% show a small to moderate decline in relationship satisfaction, thus in total 60-70% of new parents report a decrease in relationship satisfaction after the transition to parenthood (e.g., Petch, Halford, Creedy, & Gamble, 2012a). This decline in mean relationship satisfaction in new parents is more marked than in childless couples, although childless couples also experience a decrease in mean relationship satisfaction over time (Lawrence, Rothman, Cobb, Rothman, & Bradbury, 2008).

Relationship education (RE) is often offered to new parents couples with the aim of enhancing their relationship skills, and thereby attenuating the deterioration of relationship satisfaction in new parent couples (Petch, Halford, Creedy, & Gamble, 2012b). Becoming parents might well influence couple's use of skills. For example, tiredness from sleep deprivation might undermine the use of couples' relationships skills. The aim of the current study was to investigate the changes in relationship skills during the transition to parenthood, and the association of these changes with relationship satisfaction. Such an understanding could guide which skill to target in future RE for couples becoming parents.

The deterioration of relationship satisfaction after birth is linked to many significant changes affecting both partners. Sleep deprivation of parents with young children is almost universal (Medina, Lederhos, & Lillis, 2009). On average a baby adds 40 hours of extra work to the couple household, of which mothers do about 75 % to 80% of that extra work (Bianchi, Milkie, Sayer, & Robinson, 2000). Furthermore, a satisfying work-family life-balance is often

demanding (Baxter, Hewitt, & Haynes, 2008) and covaries with reduced time for couple leisure activities (Claxton & Perry-Jenkins, 2008). Associated with these multiple stressors associated with parenthood, most couples report a decrease in relationship satisfaction (Curran, Hazen, Jacobvitz, & Sasaki, 2006; Kluwer & Johnson, 2007; Mitnick, Heyman, & Smith Slep, 2009; Twenge, Campbell, & Foster, 2003), a decline in relationship intimacy (e.g., Claxton & Perry-Jenkins, 2008; Kluwer, 2010), and a decline in partners' support for each other (Karney & Bradbury, 1995). Moreover, the frequency of sexual intercourse is often lower than before pregnancy (Hipp, Kane Low, & van Anders, 2012). In sum, there is a consistent finding that the transition to parenthood represents a challenge in couples' lives that often is associated with erosion of relationship satisfaction.

Importance of Relationship Skills for Couples' Functioning

Communication. Communication is a well-replicated correlate and predictor of relationship satisfaction and stability (Karney & Bradbury, 1995; Markman, Rhoades, Stanley, Ragan, & Whitton, 2010; McNulty & Russell, 2010; Woodin, 2011). More specifically, hostility expressed during conflict discussion is cross-sectionally associated with low relationship satisfaction (Woodin, 2011), and predicts decline in relationship satisfaction (M. D. Johnson et al., 2005). In contrast, positive communication predicts slower rates of negative change in relationship satisfaction (M. D. Johnson et al., 2005). Thus, to predict change in relationship satisfaction both positive communication and negative communication are important (Gottman, 1994). However, so far, knowledge on the trajectory of communication behaviors during the transition to parenthood is sparse and the current study was an attempt to fill this gap.

Dyadic coping. DC is an interpersonal process during which the partners cope with stressors they are experiencing conjointly, and through which the couple develops a shared appraisal, joint goals and coordinated coping actions (Bodenmann, 1997, 2005). There are

different forms of DC (Bodenmann, 1997): *Supportive DC* happens when only one partner (A) is stressed (e.g., because of their job situation) and the other partner (B) has resources to support partner A in adapting to the stressful situation. *Common DC* occurs when both partners are affected by the same stressor (e.g., sleep deprivation because of the crying baby) and want to cope as a team. N*egative DC* subsumes all coping forms that are not helpful (i.e., ambivalent DC, superficial DC, and hostile DC).

Recent studies (Falconier, Nussbeck, & Bodenmann, 2013; Merz, Meuwly, Randall, & Bodenmann, 2014) show that DC buffers the impact of stress on relationship for couples facing a wide range of stresses (e.g., reducing deterioration in couple communication), and DC is a replicated predictor of relationship satisfaction (Bodenmann, Pihet, & Kayser, 2006; Falconier, Jackson, Hilpert, & Bodenmann, 2015; Papp & Witt, 2010). However, research on DC during the transition to parenthood is lacking.

Relationship self-regulation. Relationship self-regulation (SR) is a process whereby each partner assesses their relationship behaviors, sets self-change goals, and implements self-change to enhance their couple relationship. *SR strategies* refer to the work that one invests in order to maintain and improve their own relationship and *SR effort* relates to one's persistence in attempts to improve the relationship despite potential difficulties. SR has repeatedly been shown to be associated with high relationship satisfaction (Halford, 2011; Halford, Lizzio, Wilson, & Occhipinti, 2007; Shafer, James, & Larson, 2015). Given the likelihood of a decline of relationship satisfaction during the transition to parenthood, SR might well be important for new parent couples.

Aims of the Current Study

The aim of the current study was twofold. First, we investigated the trajectories of key relationship behaviors (communication, DC, SR) and relationship satisfaction across the transition to parenthood. We hypothesized that there would be a significant decrease of

positive relationship behaviors (positive communication, supportive and common DC, and SR strategies and effort) and an increase in negative behaviors (negative communication, negative DC) across the transition to parenthood (Hypothesis 1). Second, we examined the association between relationship behaviors and relationship satisfaction across the transition to parenthood. Based on studies consistently reporting a positive association between positive relationship behaviors and relationship satisfaction (e.g., Falconier et al., 2015; Halford, 2011), we hypothesized that relationship behaviors would be positively associated with relationship satisfaction across the transition to parenthood. In similar vein, we expected negative relationship behaviors to be negatively associated with relationship satisfaction (Hypothesis 2).

Method

Participants and Procedure

Participants were n = 103 couples becoming parents who were approached while attending information events at different hospitals in the German speaking part of Switzerland or informed online about the study through different platforms and newsletters. Couples were asked to take part in a study examining relationships during transition to parenthood. Inclusion criteria for the study were: (a) the woman was not longer than 27 weeks pregnant; (b) the relationship was stable; (c) neither partner had children from a previous relationship; and (d) both partners spoke and wrote German.

The 4.7 % dropout (5 couples) occurred because of being too busy (n = 1), unmet expectations (n = 2), and no reason given (n = 2). They all dropped out before they filled in the first questionnaire after birth. While sample attrition was minimal, 21.6% of participating individuals missed one or more points of measurement.

Men's mean age was 34.2 years (*SD* = 6.3) and women's mean age was 31.9 years (*SD* = 3.9). Fifty two percent of women earned between 41'000 and 80'000 Swiss francs per year (approximately between $41'800 and $81'600) and 50% of the men earned between 61'000 and 100'000 Swiss francs per year (approximately between $62'400 and $102'000), what indicates an average class sample regarding income (Swiss Federal Bureau of Statistics, 2016). About the majority of the couples (53%) were married and the rest were cohabiting. Highly educated people were overrepresented in the current sample with 70% of the men and women having a university qualification.

Measures

Partners completed an online set of self-report measures on their communication, DC, SR and relationship satisfaction five times: at approximately week 27 (T1) and week 32 (T2) of pregnancy; and at two weeks (T3), 14 weeks (T4) and 40 weeks (T5) after birth.

Communication. Positive and negative communication behavior in conflict situations was assessed by the 19-item self-report measure of the Marital Communication Questionnaire (MCQ; Bodenmann, 2000), which is based on the communication behaviors defined in the observational coding system the Specific Affect Coding System (SPAFF; Gottman, 1994). Each item is rated on a 6-point scale (1 = *never*, 6 = *very often*). Positive communication was captured by 6 items (e.g., *"I am actively interested and curious about what my partner is telling me"*), and negative communication was captured by 13 items (e.g., *"I insult my partner"*). Items of both scales were averaged with higher values indicating more positive and negative communication, respectively. Past studies demonstrated high reliabilities (e.g., Bodenmann, Hilpert, Nussbeck, & Bradbury, 2014). In this study, the internal consistencies for T1 to T5 were the following: Positive communication: α_{women} = .83 -.86 and α_{men} = .82 -.86; negative communication: α_{women} = .80 -.86 and α_{men} = .76 -.84.

Dyadic coping (DC). DC was measured using the 37-item self-report scale of the Dyadic Coping Inventory (DCI; Bodenmann, 2008).The DCI assesses dyadic coping behaviors (i.e., common DC, supportive, and negative). All items were rated on a 5-point scale (1 = *very rarely*, 5 = *very often*). Common DC was measured by five items (e.g. "*We try to cope with the problem together and search for appropriate solutions*"), supportive DC was measured by five items (e.g. "*I show empathy and understanding to my partner*"), and negative DC was measured by four items (e.g. "*I do not take my partner's stress seriously*"). Psychometrics of the DCI are well documented (e.g., Bodenmann, 2008). In this sample, the ranges of internal consistencies for T1 to T5 were the following: common DC: α_{women} = .69 -

.81, α_{men} = .62 -.73, supportive DC: α_{women} = .75 -.82, α_{men} = .75 -.84; negative DC: α_{women} = .52 -.68, α_{men} = .56 -.73.

Relationship Self-Regulation. Self-regulation (SR) was assessed by a German version (after translation and independent back translation to ensure accuracy of meaning in the translated version) of the 16-item Self-Regulation for Effective Relationships Scale (SRERS; Wilson, Charker, Lizzio, Halford, & Kimlin, 2005). All items were rated on a 6-point Likert-scale (1 = *not true at all*, 6 = *very true*). The SRERS has two subscales: strategies (10 items, e.g., "*I try to apply ideas about effective relationships to improving our relationship*") and efforts (6 items, e.g., "*If my partner does not appreciate the change efforts I am making, I tend to give up*" (reverse scored)). Item scores were averaged with higher values indicating higher self-regulation strategies and self-regulation efforts, respectively. Total SR was computed by including all dimensions of SR. The SRERS has been shown to have satisfactory psychometric properties (Wilson et al., 2005). In the current study, ranges of internal consistencies for T1 to T5 were the following: self-regulation strategies: α_{women} = .81 -.88, α_{men} = .84 -.90; self-regulation efforts: α_{women} = .68 -.74, α_{men} = .70 -.78.

Relationship Satisfaction. Relationship satisfaction was assessed with the German version of the 4 item version of the Couple Satisfaction Index-4 (CSI-4; Funk & Rogge, 2007). Participants rated four global evaluations of their romantic relationship (e.g., "*Please indicate the degree of happiness, all things considered, of your relationship*"). Items were summed with higher scores indicating higher relationship satisfaction. The CSI-4 has good reliability and validity in previous studies (Funk & Rogge, 2007). In this sample, ranges of the in internal consistencies for T1 to T5 were α = .65 - .82 for women and α = .68 -.87 for men.

Statistical Analyses

In this study, data from five points of measurement were nested within 103 heterosexual couples. To account for the nested data structure, we ran a number of sex specific multilevel

models (Raudenbush & Bryk, 2002) with gender specific random intercept and slope parameters estimated using the nlme package in R (Pinheiro, Bates, Sarkar, & R Core Team, 2016). Before running the models, time was centered at the time of birth and expressed as weeks since birth (T1 = -13, T2 = -8, T3 = 2, T4 = 14, T5 = 40).

To test Hypothesis 1, we ran eight separate unconditional growth models for each of the seven relationship behaviors (positive communication, negative communication, positive DC, common DC, negative DC, SR strategies, SR efforts), and relationship satisfaction to evaluate change across the transition to parenthood. We used a stepwise procedure for model comparisons with fit indices (Singer & Willett, 2003). Visual inspection of the data suggested trajectories of all variables were approximately linear. Including quadratic terms in the models did not improve model fit in any instance, and we therefore report linear models. We followed Zuur and colleagues (2009) stepwise procedure of model comparison. Thus, we report random intercept models, and - where indicated that it had a better model fit - models including random slopes.

To test Hypothesis 2 about the association between relationship behavior and relationship satisfaction, we ran separate multilevel Actor-Partner Interdependence models (Kenny, Kashy, & Cook, 2006) for each of the independent variables (i.e., communication, DC, and SR) using self-report data from men and women. To test if relationship behaviors predicted the decrease of relationship satisfaction over time, we included time and an interaction term of time with relationship behaviors as predictors in our models. Following recommendations (Bolger & Laurenceau, 2013; Raudenbush & Bryk, 2002), we used double intercept models to provide gender-specific slopes and intercepts. Following recommendations of Zuur and colleagues (2009), we tested the optimal random structure by a stepwise procedure of model comparisons (comparing BICs with a χ^2-test). We extended the same model structure to run additional analysis about the predictive power of relationship

behaviors for lagged effects. Lagged effects refer to the effects of a relationship behavior at T1 on relationship satisfaction on T2, a relationship behavior at T2 on relationship satisfaction at T3 and so on, so that previous relationship behaviors are used to predict relationship satisfaction at the following measurement point. To allow for autocorrelation of relationship satisfaction across time, we included prior relationship satisfaction score as a predictor of relationship satisfaction at the subsequent time point. Before running the models, the predictors were standardized ($M = 0$, $SD = 1$).

Results

Except for negative DC, all relationship behaviors decreased for one or both partners across the transition to parenthood (see Table 1). As shown in Figure 1, changes across time were approximately linear, and declines in positivity began during pregnancy. Females' positive communication decreased significantly ($\beta_{women} = -0.003$, $p = .009$; $\beta_{men} = -0.002$, $p = .075$), which indicates a small effect ($d_{women} = 0.16$; $d_{men} = 0.11$). Common DC declined significantly in women and in men ($\beta_{women} = -0.008$, $p < .001$; $\beta_{men} = -0.005$, $p < .001$) indicating medium effect sizes ($d_{women} = 0.42$; $d_{men} = 0.27$). The significant random slope effect in men (χ^2_{women} (2) = 4.75, $p = .093$; χ^2_{men} (2) = 6.19, $p = .045$) indicated that men differed in their change in scale points per week in common DC during the transition to parenthood. Supportive DC significantly decreased significantly in both genders over time ($\beta_{women} = –0.004$, $p < .001$; $\beta_{men} = –0.005$, $p < .001$) with a small to medium effect size ($d_{women} = 0.21$; $d_{men} = 0.27$). The model allowing for random slopes in women proved to have a better fit than with fixed slopes only ($\chi^2_{women}(2) = 6.08$, $p = .048$; $\chi^2_{men}(2) = 3.52$, $p = .172$), indicating that in women, there was variation in how much supportive DC changed across time whereas the change in men seemed to be more homogenous. SR strategies decreased significantly in women and in men ($\beta_{women} = -0.004$, $p = .010$, $d_{women} = 0.21$; $\beta_{men} = -0.003$, $p = .004$, $d_{men} = 0.16$) with significant random slopes effect for women (χ^2_{women} (2) = 7.60, $p =$

.024; χ^2_{men} (2) = 5.50, p = .064). SR effort did not decrease significantly in women (β_{women} = -0.002, p = .093, d_{women} = 0.11) but significantly in men (β_{men} = -0.004, p = .024, d_{men} = 0.21). Women and men did not change significantly in negative communication (β = 0.001, p = .067, d_{women} = 0.05; β = -0.001, p = .270, d_{men} = 0.05) and did not increase significantly in negative DC (β_{women} = 0.001, p = .455, d_{women} = 0.05; β = 0.002, p = .075, d_{men} = 0.05). Relationship satisfaction declined significantly in women and in men across time (β_{women} = -0.053, p < .001; β_{men} = -0.039, p < .001), which indicates a medium to large effect size (d = 0.62). Model comparisons indicated that there was substantial between-person variability in the change of satisfaction across time for both genders (χ^2_{women} (2) = 19.13, p < .001; χ^2_{men} (2) = 22.27, p < .001).

Associations with Relationship Satisfaction

Cross-sectional associations between relationship behaviors and relationship satisfaction were examined using a multilevel approach (see Table 2). This means that each behavior was a time varying predictor that was tested for it's cross-sectional with relationship satisfaction, a time varying dependent variable across the time of measurement (i.e., from T1 to T5). As shown in Table 2, in both genders, own positive communication, common and supportive DC and SR strategies were positively associated with one's own relationship satisfaction throughout the transition of becoming parents. Additionally, males' SR effort was positively related to their own relationship satisfaction. Negative communication was negatively associated with one's own relationship satisfaction in both genders. Males' negative DC was negatively linked with their relationship satisfaction. Except males' common DC, all male's positive relationship behaviors were positively and male's negative relationship behaviors negatively associated with their female partners' relationship satisfaction. In contrast, females' supportive DC was positively associated with their male partners' relationship satisfaction. The interaction of relationship behavior and time (see last four rows of table 2)

indicates that the course of relationship satisfaction depends on the level of relationship behavior. In women, none of their own relationship behaviors were related to the trajectory of relationship satisfaction. In contrast, in men's higher supportive DC and SR strategies were associated with a smaller decline in relationship satisfaction across the transition to parenthood. Furthermore, men with high negative communication and negative DC had a steeper decline in relationship satisfaction across the transition to parenthood. Looking at partner effects, the higher male's negative communication, the more their partners' relationship satisfaction declined over time. Males' supportive DC was associated with a smaller decline in female relationship satisfaction over time. Furthermore, the higher females' common DC and SR strategies the less their partners' relationship satisfaction declined over time.

Lastly, we tested whether relationship behaviors prospectively predicted relationship satisfaction at the following time point (see Table 3 for the lagged analysis). Women's relationship satisfaction was predicted by their own SR effort (*Est* = 0.55, *SE* = 0.21, *p* = .009). This means, that women who reported one standard deviation above the average in SR effort at one point of measurement (e.g. at T1), scored 0.27 points higher on relationship satisfaction on the next point of measurement (e.g. at T2) compared to those women with an average SR effort (at T1). For men, being one *SD* above the average in supportive DC (*Est* = 0.58, *SE* = 0.15, *p* = .001) and or in SR strategies (*Est* = 0.49, *SE* = 0.16, *p* = .003) predicted a 0.58 points, 0.49 points increase, respectively, in future relationship satisfaction. Males' negative DC (*Est* = -0.58, *SE* = 0.13, *p* < .001) predicted lower own relationship satisfaction on the next point of measurement. Partner behavior predicted only female future relationship satisfaction: females, whose male partner reported one *SD* above the average in supportive DC (*Est* = 0.28, *SE* = 0.13, *p* = .028), scored higher in future relationship satisfaction.

Discussion

In this study, we investigated changes across the transition to parenthood on relationship behaviors (i.e., communication, dyadic coping (DC) and relationship self-regulation (SR)), and relationship satisfaction. Positive relationship behaviors decreased in both genders across the transition to parenthood, except for female SR effort and male positive communication. Apart from female negative communication, negative relationship behaviors did not change across the transition to parenthood. One own positive relationship behaviors (excluding female SR effort) predicted one's own high relationship satisfaction, and one's own negative relationship behaviors (except female negative DC) were negatively associated with one's own relationship satisfaction. Except for male common DC, all potential partner effects of males' of positive and negative relationship behaviors were significant for women. In contrast, in men, only one partner effect (female supportive DC) was significantly associated with men's relationship satisfaction.

We tested whether positive relationship behaviors buffered, and if negative relationship behavior amplified the decline of relationship satisfaction across time. Males' SR strategies buffered the decline in their own relationship satisfaction. Men's supportive DC attenuated the decline of both genders' relationship satisfaction, while males' negative communication and negative DC amplified the decline of both genders' relationship satisfaction. Additionally, females' common DC and SR strategies predicted men's relationship satisfaction. With regard to the lagged effect models, female relationship satisfaction was predicted by females' own prior SR effort and their partners' supportive DC. In contrast, male's relationship satisfaction was solely predicted by their own relationship behaviors: supportive DC, SR strategies and negative DC.

The current research replicated previous research (see for an overview Mitnick et al., 2009) that there is a decline in relationship satisfaction across the transition to parenthood,

and extends prior research showing decreases in positive relationship behaviors. In combination these findings highlight the demanding character of the transition to parenthood for many couples and their relationships. This decrease in positive relationship behavior may just represent a return to the couple's baseline from a "honeymoon" of cooperation and weness that couples experience during pregnancy (Feeney, Hohaus, Noller, & Alexander, 2001). In addition, parents may have less time and energy to engage in positive relationship behaviors, because of the high demands of infant care (Halford et al., 2015). Negative relationship behaviors (except female negative communication) did not change significantly during the transition to parenthood, which may indicate that partners are more thoughtful as there is a baby around and therefore try not to burden the relationship (and the family) by behaving negatively. The fact that female negative communication decreased across the transition to parenthood seems to underpin this explanation or, may indicate however, that women's prenatal stress level might be particularly high that they less control their negativity compared to the time after delivery.

The four out of eight random effects in women (supportive DC, SR strategies, negative DC, and relationship satisfaction) and three out of eight random effects in men (common DC, negative communication and relationship satisfaction) highlight a certain robustness of our findings. For the majority of the couples the transition to parenthood seemed to undermine positive relationship behaviors and relationship satisfaction, although the extent of decline was highly variable, which is in line with previous studies (Petch et al., 2012b). The variable adjustment of couples to parenthood may be due to different environments (e.g., social support to manage the demands, temperament of the baby), or personal factors (e.g., personality or family background). This variability emphasizes the need to assess risk and resilience factors of couples becoming parents to better understand which couples are more

likely to be negatively affected by the transition to parenthood. This in turn could help to identify those couples most likely to benefit from support programs.

Prior research with couples not becoming parents finds that positive behaviors often decline across time in couples (D. R. Johnson, Amoloza, & Booth, 1992). However, the rate of change in new parents suggests that pregnancy and becoming a parent accelerate the decline in positivity. A rapid loss of positivity may be particularly detrimental for new parents. Positivity displayed during problem discussions predicts a less steep slope of decline of relationship satisfaction (M. D. Johnson et al., 2005), and new parent couples often have to problem solve a range of challenges as new parents (Halford et al., 2015). A recent study by Graber, Laurencau, Miga, Chango, and Coan (2011) showed that positivity (e.g., positive affect, intimacy) was an even stronger predictor than negativity (e.g., contemptuous behaviors) of relationship satisfaction. Therefore, the decline of positivity in couples becoming parents is alarming, as partners stay in close relationships to experience emotional warmth, caring, and interest by the other and to feel supported and beloved (Bachand & Caron, 2001).

Associations with Relationship Satisfaction

In line with previous research (Falconier et al., 2015; Halford, Petch, & Creedy, 2010; Ruffieux, Nussbeck, & Bodenmann, 2014) our findings underpin the importance of positive relationship behaviors for relationship satisfaction, as well as the detrimental effect of negative relationship behaviors. We found partner effects, but mainly in women: Females' relationship satisfaction was determined by own but also partners relationship behaviors while males' relationship satisfaction was mainly influenced by their own behavior. Women seem to be more influenced by their partners' behaviors than men (Baumeister & Sommer, 1997) and their relationship satisfaction is more strongly associated with their partners' relationship behavior than is men's satisfaction.

As relationship satisfaction and positive relationship behaviors decreased across the transition to parenthood, providing relationship education (RE) might help couples protect their relationship against harmful factors (Petch et al., 2012b). Based on our results it may be important to consider positive as well as negative relationship behaviors (i.e., communication, DC and SR) that are associated with relationship satisfaction (Halford et al., 2015). Especially supportive dyadic coping and SR strategies were associated with higher relationship satisfaction across the transition to parenthood which bolsters the importance of strengthening DC (see Couples Coping Enhancement Training, CCET; Bodenmann & Shantinath, 2004) and SR (see Couple CARE and Couple CARE for Parents; Halford, Moore, Wilson, Farrugia, & Dyer, 2004; Halford et al., 2010).Significant interaction effects of relationship behaviors and time as well as the predictive power of relationship behaviors mark the need of interventions taking place before and after birth (Pinquart & Teubert, 2010).

Strengths, Limitations and Future Directions

Several strengths emphasize the importance of this study. First, to the best of our knowledge, the current study is the first to examine time effects on different positive and negative relationship behaviors (i.e., communication, DC, SR) and relationship satisfaction within a sample of couples becoming parents. Based on our results, relationship education may be refined and tailored more specifically to the needs of becoming parents. Second, we examined actor and partner effects of relationship behaviors on relationship satisfaction. The prediction of women's satisfaction form men's behavior was particularly striking.

Despite these advantages of the study, there are some limitations. Firstly, we did not have a large enough sample to analyze variability between subgroups of couples becoming parents, such as might be done with growth mixture modeling. If future research could identify specific subgroups that are at high risk for relationship distress across the transition to parenthood, that could provide useful guidance for targeting RE (Halford & Bodenmann,

2013). Secondly, participating couples were highly educated and had higher than average monthly salary, and the generalizability to lower socioeconomic groups is unclear. Rates of accessing antenatal care in Switzerland are high, and most employed women in Switzerland are eligible for fourteen weeks paid maternity leave, making recruiting couples before birth, and engaging couples after birth feasible. In contrast, some recent trials of RE in the US were with low income couples, who most often did not access antenatal care, who had little or no access to paid maternity leave, and who were recruited after the birth and showed high rates of attrition (e.g., Wood, Moore, Clarkwest, & Killewald, 2014). Effects of relationship behaviors on relationship satisfaction may be different in contexts where social policy provides certain basic levels of support for new parent couples like easy access to antenatal care and maternity leave.

Conclusion

Positive relationship behaviors declined across the transition to parenthood. Positive as well as negative relationship behaviors were associated with relationship satisfaction, and also predicted future relationship satisfaction. Based on our results, RE should particularly focus on the enhancement and maintenance of positive relationship as couples showed the most important change in this variables during the transition to parenthood. The need to maintain positivity is a key message of this study that has implications for RE for couples becoming parents. Nevertheless, most RE programs already do target the improvement of relationship skills and attitudes, therefore, findings support the usefulness of those approaches and their rationale.

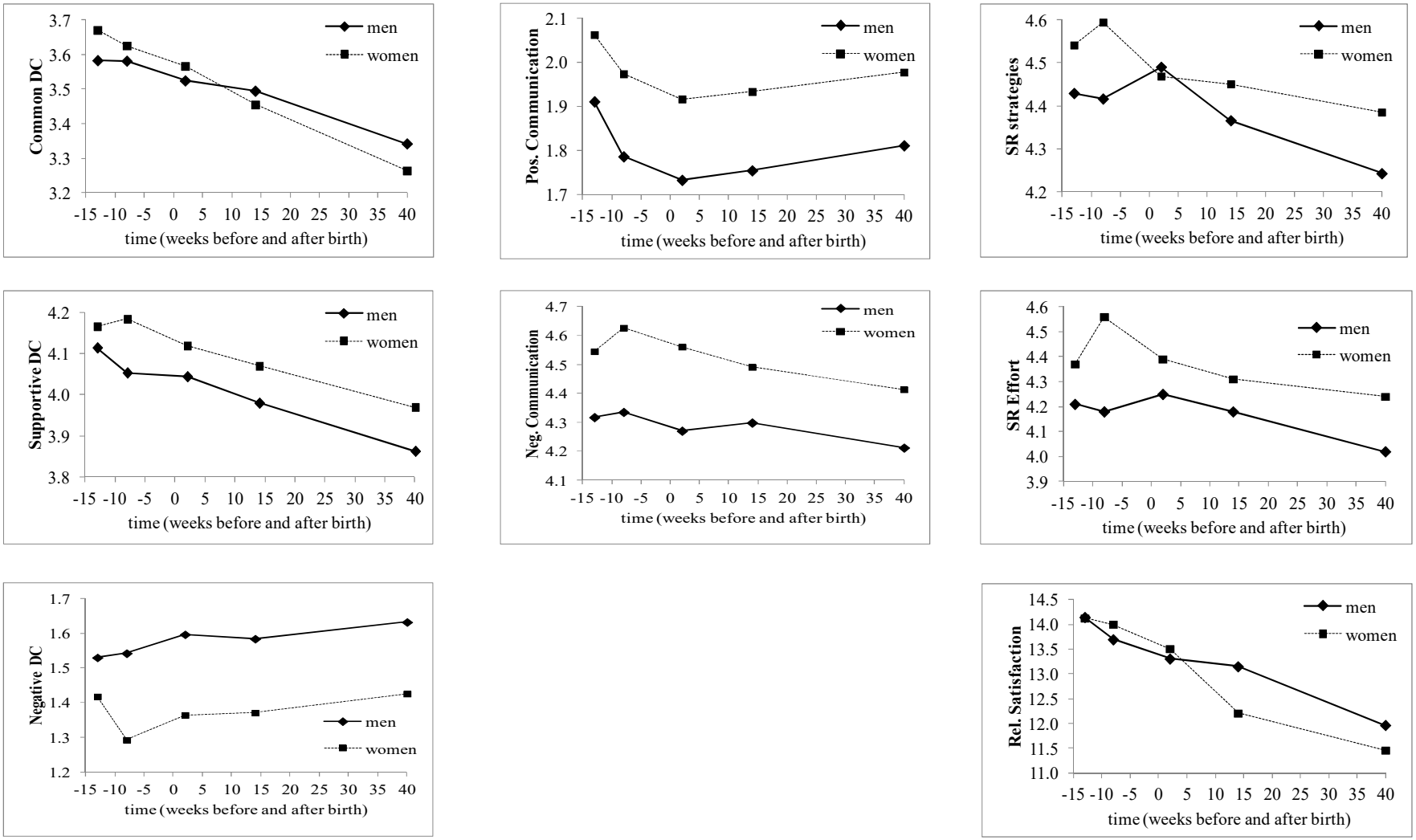

Figure 6: Time effects on all the Study Variables
Note: DC = dyadic coping; SR =relationship self-regulation; Comm. = communication; Rel. Satisfaction = relationship satisfaction

Table 4. *Mean and Standard Deviation of all the Study Variables (n = 103)*

		T1		T2		T3		T4		T5	
		M	SD	M	SD	M	SD	M	SD	M	SD
DC supp	F	4.17	0.55	4.18	0.54	4.12	0.53	4.07	0.51	3.97	0.54
	M	4.11	0.52	4.05	0.54	4.04	0.59	3.98	0.60	3.86	0.61
DC neg	F	1.42	0.53	1.29	0.47	1.36	0.41	1.37	0.36	1.43	0.47
	M	1.53	0.51	1.54	0.57	1.60	0.51	1.58	0.54	1.63	0.57
DC com	F	3.67	0.74	3.63	0.68	3.57	0.68	3.45	0.59	3.26	0.71
	M	3.58	0.55	3.58	0.58	3.52	0.62	3.49	0.65	3.34	0.67
DC tot	F	4.03	0.43	4.06	0.37	4.12	0.39	3.93	0.40	3.85	0.42
	M	4.00	0.39	3.96	0.40	3.97	0.44	3.91	0.45	384	0.48
SRS	F	4.54	0.76	4.59	0.74	4.47	0.65	4.45	0.65	4.39	0.66
	M	4.43	0.71	4.42	0.68	4.49	0.75	4.37	0.81	4.24	0.83
SRE	F	2.63	0.86	2.44	0.89	2.61	0.86	2.69	0.78	2.76	0.84
	M	2.79	0.91	2.82	0.88	2.75	0.82	2.82	0.90	2.98	0.92
SR tot	F	3.83	0.42	3.79	0.47	3.77	0.46	3.79	051	3.78	0.45
	M	3.81	0.42	3.81	0.44	3.84	0.45	3.78	0.48	3.77	0.51
Pos comm	F	2.06	0.49	1.97	0.52	1.92	0.56	1.93	0.47	1.98	0.47
	M	1.91	0.43	1.79	0.38	1.73	0.39	1.75	0.41	1.81	0.47
Neg comm	F	4.54	0.78	4.63	0.69	4.56	0.76	4.49	0.67	4.41	0.75
	M	4.32	0.73	4.33	0.77	4.27	0.73	4.30	0.79	4.21	0.75
Comm tot	F	2.48	0.99	2.65	0.88	2.64	096	2.55	0.92	2.44	0.93
	M	2.41	0.97	2.55	0.97	2.54	0.87	2.54	0.98	2.40	1.01
Rel. Sat.	F	14.13	3.35	14.00	3.02	13.51	2.71	12.21	2.31	11.46	2.23
	M	14.14	2.22	13.70	2.24	13.31	2.67	13.15	2.99	11.96	3.36

Note: M = male, F = female; Time = weeks since birth, centered at birth; DC supp= supportive Dyadic Coping; neg. DC = negative Dyadic coping; comm. DC = common Dyadic Coping; DC tot = total Dyadic Coping; SRS = relationship self-regulation strategies; SRE = relationship self-regulation; SR tot = total relationship self-regulation; neg. comm. = negative communication; pos. comm. = positive communication; comm. Tot = total communication; Rel. Sat = Relationship Satisfaction.

Table 5. *Estimates and Standard Errors of the Multilevel Models of Relationship Behaviors Predicting Relationship Satisfaction (N = 103)*

Relationship satisfaction		Predictors						
		Pos. Comm.	Neg. Comm.[b]	Common DC[b]	Supportive DC[a]	Negative DC[a]	SR Strategies[a]	SR Effort
Intercept	F	13.45 (0.20)	13.50 (0.20)	13.46 (0.19)	13.44 (0.19)	13.52 (0.20)	13.46 (0.17)	13.46 (0.21)
	M	13.55 (0.20)	13.36 (0.20)	13.48 (0.18)	13.50 (0.18)	13.63 (0.19)	13.50 (0.18)	13.49 (0.21)
Time	F	-0.05 (0.01)***	-0.06 (0.01)***	-0.04 (0.01)***	-0.04 (0.01)***	-0.05 (0.01)***	-0.05 (0.01)***	-0.05 (0.01)***
	M	-0.03 (0.01)***	-0.04 (0.01)***	-0.03 (0.01)***	-0.02 (0.01)***	-0.03 (0.01)***	-0.03 (0.01)***	-0.03 (0.01)***
Behavior own	F	**0.64 (0.16)*** **	**-0.45 (0.15)** **	**0.69 (0.14)*** **	**0.79 (0.14)*** **	-0.24 (0.15)	**0.68 (0.14)*** **	-0.05 (0.23)
	M	**0.71 (0.15)*** **	**-0.48 (0.17)** **	**0.82 (0.16)*** **	**0.75 (0.13)*** **	**-0.52 (0.13)*** **	**0.76 (0.14)*** **	**0.41 (0.20)***
Behavior Partner	F	**0.33 (0.15)***	**-0.41 (0.17)***	0.26 (0.16)	**0.42 (0.13)** **	**-0.34 (0.13)***	**0.41 (0.14)** **	**0.58 (0.21)** **
	M	0.19 (0.16)	0.09 (0.15)	0.07 (0.13)	**0.35 (0.14)***	0.21 (0.15)	0.20 (0.14)	0.17 (0.22)
Behavior own × Time	F	0.01 (0.01)	0.00 (0.01)	0.01 (0.01)	-0.00 (0.01)	-0.00 (0.01)	0.01 (0.01)	0.01 (0.01)
	M	0.01 (0.01)	**-0.02 (0.01)** **	0.01 (0.01)	**0.01 (0.01)** **	**-0.02 (0.01)*** **	**0.01 (0.01)***	0.01 (0.01)
Behavior Partner × Time	F	0.00 (0.01)	**-0.02 (0.01)** **	0.01 (0.01)	**0.01 (0.01)***	**-0.01 (0.01)***	-0.00 (0.01)	0.00 (0.01)
	M	0.00 (0.01)	-0.00 (0.01)	**0.01 (0.01)***	0.01 (0.01)	-0.01 (0.01)	**0.01 (0.01)***	0.00 (0.01)

Note: M = male, F = female; Time = weeks since birth, centered at birth; Comm. = Communication; DC = dyadic coping; pos. = positive; neg. = negative; SR = relationship self-regulation; SE are in brackets; [a] allowed for random slopes of time in women; [b] allowed for random slopes of time in men

*$p < .05$; ** $p < .01$; *** $p < .001$

Table 6 *Estimates and Standard Errors of the Multilevel Models of Lagged Relationship Skills Predicting Relationship Satisfaction (N = 103)*

Relationship satisfaction		Predictors						
		Pos. Comm.	Neg. Comm.[b]	Common DC[b]	Supportive DC[a]	Negative DC[a]	SR Strategies[a]	SR Effort
Intercept	F	3.22 (075)	2.87 (0.73)	3.68 (0.76)	3.18 (0.79)	2.88 (0.74)	3.46 (0.80)	3.33 (0.67)
	M	5.35 (0.82)	4.33 (0.77)	5.08 (0.82)	6.10 (0.84)	4.75 (0.79)	6.09 (0.86)	5.03 (0.79)
Previous relationship	F	0.72 (0.05)***	0.75 (0.05)***	0.68 (0.06)***	0.72 (0.06)***	0.75 (0.05)***	0.70 (0.06)***	0.70 (0.05)***
satisfaction (stability)	M	0.58 (0.06)***	0.64 (0.06)***	0.59 (0.06)***	0.51 (0.06)***	0.62 (0.06)***	0.52 (0.06)***	0.60 (0.06)***
Previous	F	-0.06 (0.14)	-0.19 (0.13)	0.27 (0.15)	-0.03 (0.15)	-0.16 (0.16)	0.16 (0.16)	**0.55 (0.21)****
behavior own	M	0.24 (0.15)	-0.33 (0.17)	0.28 (0.17)	**0.58 (0.15)****	**-0.58 (0.14)*****	**0.49 (0.16)****	0.24 (0.22)
Previous	F	0.23 (0.13)	-0.11 (0.15)	0.25 (0.15)	**0.29 (0.13)***	-0.22 (0.12)	0.01 (0.13)	-0.14 (0.19)
behavior partner	M	0.03 (0.16)	-0.05 (0.14)	0.06 (0.16)	0.26 (0.16)	-0.05 (0.16)	-0.12 (0.17)	-0.17 (0.24)

Note: M = male, F = female; Time = weeks since birth, centered at birth; Comm. = Communication; DC = dyadic coping; pos. = positive; neg. = negative; SR = relationship self-regulation; SE are in brackets; [a] allowed for random slopes of time in women; [b] allowed for random slopes of time in men

*$p < .05$; ** $p < .01$; *** $p < .001$

8. Study III: Becoming Happy Parents: Short Term Effects of Intervention on Relationship Competences During Transition to Parenthood [4]

Abstract

Objective: A plethora of studies indicate that relationship satisfaction declines during the transition to parenthood focusing on the time after birth. However, surprisingly little is known about changes in relationship functioning during pregnancy and about potential effects relationship education during this phase. This study examined changes in stress, relationship skills (i.e., communication, dyadic coping and self-regulation in relationship) and relationship satisfaction during the last trimester of pregnancy and evaluated the short-term effects of a new couple relationship education program in strengthening couples becoming parents before delivery. ***Method:*** Three hundred seven couples expecting their first child were quasi randomly assigned to either the Couple Care and Coping Program (CCC-P) – a couple relationship- and coparenting-focused education program, a web-based self-directed movie (movie), or the control condition (control). Couples completed assessments of their stress, couple relationship skills and relationship satisfaction at week 27 and week 32 of pregnancy while intervention took place in week 30 of pregnancy. ***Results:*** Results revealed stress communication, negative communication, and relationship satisfaction to decrease during the last trimester. Short-term effects of CCC-P have only been found in stress communication, which is the basis for dyadic coping. ***Conclusions:*** Pregnancy seems to cause some changes affecting couples' relationship skills and relationship satisfaction. Moreover, CCC-P seems to enhance an important aspect of dyadic coping which may prepare couples for upcoming challenges after birth.

[4]This research has been funded by the Swiss National Science Foundation (SNF: 146775)
A similar version of this chapter is currently being prepared for publication.

"I have learnt how stress can impact many aspects of my life" said Nicole after a workshop for becoming parents. "Yeah- and I know now how to express my feelings clearer when being stressed. I feel more prepared for the time after delivery of our son" replies Noah, Nicole's Partner.

These comments were made by a couple participating in our randomized control study to strengthen couples during transition to parenthood, which is known to be one of the most challenging phases for romantic couples. This intervention includes elements of two established couple relationship education programs (i.e., CCET and Couple Care for Parents; Bodenmann & Shantinath, 2004; Halford et al., 2004) and thus is, to the best of our knowledge, the first intervention which targets on shared realistic expectations, stress, dyadic coping, and self-regulation in relationships. This paper aims not only to investigate changes in relationships relevant variables (i.e., stress, relationship skills and relationship satisfaction) during the last trimester of pregnancy but also to explore the short-term effects of this intervention (i.e., effects before birth) on relationship competences.

Transition to Parenthood

The transition to parenthood is challenging for most of the couples (Roy, Schumm, & Britt, 2014). They do not only report pride, happiness and joy after birth (Gottman & Notarius, 2000), but also stress, as becoming parents is accompanied by many changes on different levels (Halford, Petch, & Creedy, 2015). Therefore relationship satisfaction often declines more rapidly and steeper than in childless couples (Lawrence et al., 2008). Many studies attribute the decline in relationship satisfaction in new parents to the many changes after birth (e.g., additional work due to the baby, less leisure time, sleep deprivation; Claxton & Perry-Jenkins, 2008; Halford et al., 2015; Medina et al., 2009). The consequence of these changes are often an increase of couple conflicts and decline of couple communication

(Curran et al., 2006; Kluwer & Johnson, 2007) and intimacy (Claxton & Perry-Jenkins, 2008; Dew & Wilcox, 2011).

In contrast, much less is known about changes before birth. This predominant focus on the time after birth is curious given that pregnancy is associated with many (physical) changes at least for pregnant women which require adjustment (Ulrich & Petermann, 2014) and given that *prenatal* individual (i.e., anxiety, depressive symptoms;(Matthey, Barnett, Howie, & Kavanagh, 2003)) and dyadic (i.e., length of relationship, constructive communication;(Trillingsgaard, Baucom, & Heyman, 2014)) factors have shown to predict *postnatal* relationship satisfaction. Sexuality is one of the only investigated aspects of couples' relationship during the course of pregnancy revealing that frequency of intercourse is decreased during the last trimester (Nakić Radoš, Soljačić Vraneš, & Šunjić, 2015; see for an overview: von Sydow, 1999). Additionally, women's desire for sexual intercourse decreases while male's desire remains stable (von Sydow, 1999). This mismatch can affect sexual satisfaction (Nakić Radoš et al., 2015) which in turn has been shown to affect relationship satisfaction (Bodenmann, Atkins, Schär, & Poffet, 2010).

The Need to Strengthen Couples Becoming Parents

While some potential stressful and dissatisfying factors during transition to parenthood lead do decreases in the general functioning (e.g., lack of sleep or reduction of sexual activity and frequency; Henderson, France, & Blampied, 2011; Hipp, Kane Low, & van Anders, 2012), other factors might exacerbate dyadic tensions (e.g., dysfunctional communication and reduced mutual dyadic support (Curran et al., 2006; Simpson et al., 2003)). Thus, to strengthen couples' resources (e.g., relationship skills) to cope with these new requirements through relationship education (RE) has been found to be promising (Petch, Halford, Creedy, & Gamble, 2012).

A large body of research indicates that couples' communication (Gottman, 1994; Markman et al., 2010; Ruffieux et al., 2014; Woodin, 2011) (Gottman, 1994; Markman et al., 2010; Ruffieux et al., 2014; Woodin, 2011)and dyadic coping (e.g., Bodenmann, Pihet, & Kayser, 2006; Falconier et al., 2015; Papp & Witt, 2010) are consistent and powerful predictors of relationship functioning (i.e., quality, satisfaction and stability). As communication often deteriorates under condition of stress (particularly during the transition to parenthood which is associated with multiple stressors for the couple and young family), dyadic coping skills may play a key role in buffering negative effects of stress on couples' life. Studies by Falconier, Nussbeck and Bodenmann (2013) as well as Merz, Meuwly, Randall and Bodenmann (2014) illustrate the buffering effect of dyadic coping (DC) on the impact of stress on relationship functioning. Thus, strengthening not only communication but also DC might be particularly important during the transition to parenthood, when those skills often get eroded by the stress related to first parenthood.

Apart from skills training, also self-regulation in relationships (SR) (Halford, Sanders, & Behrens, 1994) revealed to be important to be enhanced during the transition to parenthood (Petch, Halford, Creedy, & Gamble, 2012). Self-regulation focuses on goals and efforts each partner undertakes for the benefit of the close relationship and thus represents a meta-skill of happy couples (Brown, Larson, Harper, & Holman, 2016; Halford, 2011). In an attempt to support couples during the transition to parenthood, the current research suggests strengthening these three skills: couples' communication, dyadic coping and self-regulation.

Relationship Education During the Transition to Parenthood

The majority of RE programs dedicated to becoming parents covers topics of couple communication, problem solving, realistic expectations and the division of parenting tasks. A meta-analysis of RE for couples making the transition to parenthood found a small mean effect size improvement in relationship satisfaction, communication and individual well-being

(Pinquart & Teubert, 2010), which is somewhat lower than the effect of RE for couples not becoming parents (Hawkins et al., 2008). So the question is: Why does RE lead to rather small effect sizes in couples transitioning to parenthood? This might be the case because only some RE programs include infant care, even though parents are very keen to do the best for their baby (Halford et al., 2015). Additionally, programs rarely include mutual partner support like dyadic coping (Cowan & Cowan, 2014). This is surprising as becoming parents affects both partners and partners have been shown to be one of the strongest sources of support (Bodenmann, 2005). Our new RE program Couple Care and Coping Program (CCC-P) fills this gap, as it includes not only shared realistic expectation and communication, but also DC, SR and infant care at a later stage.

Timing and Dissemination of RE

In line with the assumption of prevention, to intervene before problems arise, delivering RE before birth has shown to enhance RE effects for becoming parents (Pinquart & Teubert, 2010). Two reason seem plausible for this finding: (a) couples learn and practice the contents of the RE already before birth when handling the challenges before birth (resulting in a short-term intervention effect) and thus enter the time after birth with more resources and are also better prepared for handling the upcoming challenges after birth (Cowan & Cowan, 2000) or (b) couples have more resources to learn new things during pregnancy because they are not burdened yet (resulting in no short-term intervention effect) and enter the time after birth with better skills for coping with the demanding time (Doss, Rhoades, Stanley, & Markman, 2009b). To further understand the underlying mechanism of RE program and to disentangle these two possibilities, more knowledge about the trajectory of couple's functioning during pregnancy and about intervention effects before birth is needed.

Another important aspect of prevention is dissemination, as prevention programs should reach as many people as possible who may benefit from it (Halford, Markman, & Stanley,

2008). Unfortunately, many couples who might benefit from RE do not participate due to reasons like fear of self-disclosure in group settings, restrictions regarding money and time and limited child care possibilities (Halford et al., 2004). The increasing number of self-directed RE programs (McAllister et al., 2012) tries to conquer these limiting factors and yield promising effects (e.g., Bodenmann et al., 2014; Halford, Petch, et al., 2010). In line with the more extensive format of CCC-P, we therefore produced a 1-hr web-based self-directed movie about transition to parenthood to sensitize couples becoming parents for upcoming challenges. We hoped to take the promising line of Doss et al. (2014), as the yielded promising effects with a 6-hour intervention, even though interventions of short duration (1-8 hours) have been shown to cause smaller effects than interventions of longer duration (9-20 hours; Hawkins et al., 2008).

Aims of the Current Study

The aim of the current study was twofold: First, we wanted to investigate the temporal course of stress, relationship skills (i.e., communication, dyadic coping and relationship self-regulation), and relationship satisfaction during the last trimester of pregnancy. We did not specify a directed hypothesis as, to the best of our knowledge, no studies examined the effects of pregnancy on the mentioned variables. On the one hand one could argue that strains might increase and relationship functioning deteriorates; on the other hand, it seems also reasonable to assume that nothing happens yet as the big challenges emerge not until birth. Second, we aimed to examine the short-term effects of two different formats of CCC-P delivered to first time parents before birth. This is a crucial question to be answered to further understand the mechanisms of RE delivered before birth. To strengthen becoming parents, we compared the effects of a face-to-face form of CCC-P (CCC-P) with the web-based self-directed movie (movie). While both intervention formats targeted dyadic coping, communication, and self-regulation in relationships, the movie was less extensive. We hypothesized that couples

receiving one or the other form of our intervention (self-directed or face-to-face intervention) showed more adaptive slopes regarding stress, relationship skills and relationship satisfaction compared to slopes of couples not having received any intervention. Moreover, we expected CCC-P to cause more adaptive effects in slopes than the movie as CCC-P was more intensive.

Method

Participants and Procedure

Participants were approached while attending information events at different hospitals in the German speaking part of Switzerland or informed online about the study through different platforms and newsletters. Couples were asked to take part in an evaluation of programs supporting couples across the transition to parenthood. Inclusion criteria for the study were: (a) the women was no longer than 27 weeks pregnant; (b) the relationship was stable; (c) neither partner had children from a previous relationship; and (d) both partners spoke and wrote German. 307 couples met the criteria and were quasi-randomly assigned to CCC-P (n = 85), the movie (n = 116) or the control condition (n = 106). Due to unexpected popularity of the study (about 120 enrolled couples within 8 weeks) and limits of midwifes work load capacities only quasi-random assignment was feasible. This means that during a short period we increased the ratio of allocation to control and movie condition. Each partner filled in an online questionnaire in week 27 (T1) and week 32 (T2) of pregnancy and 2 (T3), 3 (T4), 6 (T5), 9 (T6), 12 (T7), 14 (T8), 40 (T9) weeks after birth. After T1, couples were allocated to either CCC-P, movie or control condition and at week 30 of pregnancy couples received their assigned intervention. In the current study we use data form T1 and T2 only. At T2, the dropout was 2.6 % (8 couples). Mentioned reasons were being too busy (n = 3), unmet expectations (n = 3), medical complications (n = 1), and no reason given (n = 1). Of the withdrawing couples was one assigned to the movie, three to the control group and four to CCC-P (two of those withdrew before receiving the intervention).

Men's mean age was 34.1 years (*SD* = 5.2) and women's mean age was 31.9 years (*SD* = 3.8). Fifty sex percent of women earned between 21'000 and 80'000 Swiss francs per year (approximately between $20'400 and $81'600) and 57% of the men earned between 41'000 and 100'000 Swiss francs per year (approximately between $41'800 and $102'000), what indicates an upper middle-class sample. About the majority of the couples (56%) were married and the rest were cohabiting. Highly educated people were overrepresented in the current sample with 70 % of the men and 68 % of the women having a university qualification.

Measures

Stress. The individual level of stress was measured using a German version of the Depression-Anxiety-Stress-Scale (DASS; Lovibond & Lovibond, 1995; Nilges & Essau, 2015). Items were rated on a 4-point frequency scale (1 = did not apply to me at all, 4 = applied to me very much, or most of the time; e.g., "*I found myself getting agitated*"). Items were averaged to a total score with higher values indicating more stress. Past studies demonstrated satisfactory psychometric properties (Nilges & Essau, 2015). In this sample, the in internal consistencies for T1 and T2 were α = .83/.77 for women and α = .80/.78 for men.

Dyadic coping (DC). Stress communication, supportive and common DC were measured using the Dyadic Coping Inventory (DCI; Bodenmann, 2008). All items were rated on a 5-point frequency scale (1 = very rarely, 5 = very often). Stress communication was measured by four items (e.g., "*I tell my partner openly how I feel and that I would appreciate his/her support*"), supportive DC was measured by five items (e.g., "*I show empathy and understanding to my partner*"), and common DC was measured by five items (e.g., "*We try to cope with the problem together and search for ascertained solutions*"). Items of all scales were averaged with higher values indicating more DC. Various studies have demonstrated high reliability and good validity (e.g., Gmelch et al., 2008). In the current study, internal

consistencies for T1 and T2 were the followings: Stress communication: α_{women} = .76/.77, α_{men} = .63/.71; supportive DC: α_{women} = .75/.73, α_{men} = .70/.72; common DC: α_{women} = .76/.76, α_{men} = .65/.71.

Communication. Positive and negative communication behavior in conflict situations was assessed by the marital communication questionnaire (MCQ; Bodenmann, 2000), which is based on the communication categories as assessed in the Specific Affect coding system (SPAFF; Gottman & Levenson, 1999). All items were rated on a 6-point scale (1 = *never*, 6 = *very often*). Positive communication was captured by 6 items (e.g., *"I am actively interested and curious about what my partner is telling me"*), negative communication was captured by 13 items (e.g., *"I insult my partner"*). Items of both scales were averaged with higher values indicating more positive and negative communication respectively. Past studies demonstrated high reliabilities (e.g., Bodenmann et al., 2014). In this study, the in internal consistencies for T1 and T2 were the followings: Positive communication: α_{women} = .83/.83 and α_{men} = .82/.82; negative communication: α_{women} = .79/.81 and α_{men} = .76/.78.

Relationship Self-Regulation (SR). SR was assessed by a German (checked for correctness by translating back and forth) version of the 16-item Self-Regulation for Effective Relationships Scale (SRERS; Wilson et al., 2005). All items were rated on a 7-point Likert-scale (1 = not true at all, 6 = very true). The SRERS has two subscales: strategies (10 items, e.g., "*I try to apply ideas about effective relationships to improving our relationship*") and efforts (6 items, e.g., "*If my partner does not appreciate the change efforts I am making, I tend to give up*" (recoded)). Items of both scales were averaged with higher values indicating higher self-regulation strategies and self-regulation efforts respectively. The SRERS has been shown to have satisfactory psychometric properties (Wilson et al., 2005). In the current study, internal consistencies for T1 and T2 were the followings: SR strategies: α_{women} = .80/.81, α_{men} = .83/.83; SR efforts: α_{women} = .67/.72, α_{men} = .71/.72.

Relationship Satisfaction. Relationship satisfaction was measured with the German version of the Couples Satisfaction Index (CSI; Funk & Rogge, 2007). Participants provided four global evaluations of their romantic relationship (e.g., "*Please indicate the degree of happiness, all things considered, of your relationship*"). Items were summed up for a total score with higher scores indicating higher relationship satisfaction. The 4-item CSI has demonstrated good reliability and validity in previous studies (Funk & Rogge, 2007). In this sample, the in internal consistencies for T1 and T2 were α = .76/.70 for women and α = .73/.73 for men.

Intervention

Couple Care and Coping for Parents (CCC-P). Couple Care and Coping program (CCC-P) is a combination of the two validated relationship education programs CCET (Bodenmann & Shantinath, 2004) and Couple CARE (Halford et al., 2004). The program consists of 6 face-to-face units and focuses on couple relationship and parenting. A psychologist led the full-day workshop of Unit 1 for groups of three to six couples in week 30 of pregnancy and covered topics of shared realistic expectations, stress, dyadic coping and self-regulation in relationship. Beside presentations, group discussions and individual exercises, couples got intensively coached in communication and dyadic coping being in a private room. At the end, partners filled in a self-change plan focusing self-regulation in relationships. Unit 2-6 were home visits by a midwife taking about 1.5h each. Unit 2 was delivered when the women was about 32 weeks pregnant, while units 3-6 took place every three weeks starting three weeks after birth. In each session with the midwife, couples learnt more about parenting, reviewed their last self-change plan, got coached in communication and dyadic coping and wrote a new self-change plan.

Psychologists providing the workshop were licensed trainers and are used to coach couples in communication. Ten midwifes received a specific CCC-P training of two days.

After every home visit, all midwifes completed an activity completion checklist to increase program fidelity. Monthly, all midwifes attended group supervisions and received in between individual written feedback based on their audio records of the home visits.

Movie "Happy as couple with baby". The web-based self-directed intervention is a 1h-movie aiming at sensitization for challenges emerging during transition to parenthood. It covers the topics of CCC-P differing in extent and not addressing self-change explicitly. Six young parents talk about their experiences during transition to parenthood and experts underpin these statements by providing scientific knowledge. Additionally, ideas how to implement the knowledge to daily life are given to enhance transfer to couples daily life. Each partner received an individual access code via email to stream the movie online. To check if couples watched the movie, they have been asked about the movie and the amount of time couples streamed the movie was tracked.

Control Condition. In this condition young parents did not receive any additional RE during transition to parenthood but got the regular treatment specified by law. In Switzerland, all parents get ten public paid home visits by midwifes covering topics of parenting and handling of the baby during the first 56 days after birth. After completion of the study, couples had the choice between watching the movie or participating in a full-day workshop.

Statistical Analyses

The goals of this study were, firstly to test the temporal course of stress, relationship skills, and relationship satisfaction during the last trimester of pregnancy; and secondly, to examine the short-term effects of two different interventions (i.e., movie and CCC-P). For examining our first question, we calculated 2-way analyses of variance (ANOVA; time (T1 vs. T2) × gender (men vs. women)) with repeated measurements on both factors. Treating gender as a repeated-measure factor allows accounting for the interdependency between men

and women in dyadic data (Kenny et al., 2006). As we were interested in the plain main effects of time (without intervention effects), we used only the data of couples being in the control condition for analyzing the first research question. For examining our second question, we firstly tested if outcome variables differed at T1 across treatment conditions and gender respectively by conducting two-way analyses of variance (ANOVA; treatment (control vs. movie vs. workshop) × gender (men vs. women)) with repeated measurements on gender. Secondly, to test the main hypotheses of our second question, we calculated 3-way ANOVAs (treatment (control vs. movie vs. CCC-P) × gender (men vs. women) × time (T1 vs. T2)) with repeated measurements on gender and time. In the case of significant treatment effects, *post-hoc* tests with Bonferoni correction were employed. As we conducted separate ANOVAs for all outcome variables in both research questions, resulting in 9 ANOVAs each, we corrected the *p*-values with the Šidàk approach for counteracting inflations of Type 1 error (Abdi, 2010). All analyses were conducted using SPSS (Version 22).

Results

Means and standard deviation of all study variables for men and women at T1 and T2 are presented in Table 7.

Temporal Course of Outcome Variables During Pregnancy

Results of all ANOVAs testing the temporal course of all outcomes variables in couples not receiving a treatment (i.e., control condition) are presented in the left columns of Table 8 (Model 1). Significant effects in the factor time would indicate a significant change from T1 to T2. We found significant time effects in stress communication ($F(1, 75) = 8.39$, $p_{Šidàk} = .044$), negative communication ($F(1, 74) = 38.40$, $p_{Šidàk} < .001$), and relationship satisfaction ($F(1, 75) = 8.15$, $p_{Šidàk} = .049$) while no time effects emerged in stress, supportive DC, common DC, positive communication, SR strategies, and SR efforts. More specifically, stress

communication, negative communication, and relationship satisfaction all decreased from T1 to T2.

Short-Term Intervention Effects

Preliminary, we tested all outcome variables on differences across genders and treatment conditions at T1. Men and women differed significantly in stress ($F(1, 293) = 30.63$, $p < .001$), stress communication ($F(1, 291) = 198.01$, $p < .001$), supportive DC ($F(2, 291) = 1.77$, $p = .173$), positive communication ($F(1, 295) = 27.83$, $p < .001$), negative communication ($F(1, 295) = 39.91$, $p < .001$), SR strategies ($F(1, 292) = 10.00$, $p = .002$), SR efforts ($F(1, 290) = 6.61$, $p = .011$), and relationship satisfaction ($F(2, 295) = 1.88$, $p = .154$) with women reporting higher values in stress, stress communication, supportive DC, positive communication, negative communication, SR strategies, and relationship satisfaction, and with men reporting higher values in SR efforts. In contrast, no gender differences were found in common DC. We did not find any differences across treatment conditions at T1 (stress: $F(2, 293) = 0.92$, $p = .400$; stress communication: $F(2, 291) = 1.95$, $p = .145$; supportive DC: $F(2, 291) = 1.77$, $p = .173$; common DC: $F(2, 291) = 0.69$, $p = .502$; positive communication: $F(2, 295) = 0.92$, $p = .400$; negative communication: $F(2, 295) = 0.62$, $p = .538$; SR strategies: $F(2, 292) = 2.30$, $p = .103$; SR efforts: $F(2, 290) = 2.41$, relationship satisfaction: $F(2, 295) = 1.88$, $p = .154$) and none of the interaction terms gender × treatment reached the statistical significance of $p < .05$ (p-values ranging from .072 to .870).

In the right column of Table 8 (Model 2) results of all ANOVAs testing short-term effects of the interventions are presented. Significant effects of the factor time × treatment would indicate differences in the slopes of an outcome variable from T1 to T2 (i.e., short-term intervention effects) across the treatment conditions. Significant effects of the factor time × treatment × gender would indicate gender differences in the short-term intervention effects. Significant short-term intervention effects were only found in stress communication ($F(2,$

241) = 5.91, $p_{Šidàk}$ = .027, η^2 = .05) while no effects were found in the other target variables. More specifically, post-hoc tests indicated that slopes of participants in the movie and CCC-P condition were significantly different from the slope of participants in the control condition (F(1, 241) = 11.82, p = .001, η^2 = .047; see Figure 1) with participants in the movie and CCC-P condition showing a tendency to increase in stress communication and participants in the control condition showing a tendency to decrease in stress communication from T1 to T2.

Discussion

In the current study, we aimed to investigate two questions: Firstly, we investigated the temporal course of stress, relationship skills (i.e., communication, dyadic coping and relationship self-regulation), and relationship satisfaction in the last trimester of pregnancy. We did not have any specific hypotheses as there is no past research available about the temporal course of these factors during pregnancy. Secondly, we evaluated the short-term effect (i.e., intervention effects before birth) of CCC-P, a new face to face RE program, and a web-based self-directed movie tailored for couples transitioning to parenthood. We hypothesized that couples having received an intervention before birth (i.e., CCC-P or movie) have more adaptive slopes from T1 to T2 in stress, relationship skills and relationship satisfaction compared to couples not receiving RE. Moreover, we expected that the effect of CCC-P is stronger than the effect of the movie.

Temporal Course of Outcome Variables During Pregnancy

In respect to our first research question, we found significant changes across time in stress communication, negative communication, and relationship satisfaction while no effects were found in stress, positive communication, supportive and common DC, in SR strategies and SR efforts. More specifically, couples' stress communication, couple's negative

communication, and couple's relationship satisfaction all decreased within the last trimester of pregnancy.

Results revealed that stress communication declines during the last trimester of pregnancy which means a reduction of the ability to communicate stress to the other partner and to request his or her support for coping. This makes it more difficult for the partner to provide adequate support as stress communication is the basis for dyadic coping (Bodenmann, 2000). In addition, we also found negative communication to decrease; thus, couples seem to reduce negative communication like invalidation, conflict, criticism or withdrawal in the last weeks of pregnancy. One explanation for decreases in stress communication and negative communication might be that the upcoming joyful event of birth causes a more positive atmosphere and therefore resulting in less negative communication and less communication about individual stress. However, we did not find any decrease in stress; thus, partners do not seem to be more relaxed generally and we did not find any increases in positive relationship skills (i.e., supportive DC, common DC, SR strategies, SR effort or positive communication) suggesting that the dyadic interactions are not more positive. Another explanation might be that in the last week of pregnancy, partners avoid burdening each other what results in less stress communication and negative communication. We further found a decline in relationship satisfaction during the last trimester of pregnancy. Thus, the widely replicated decline in relationship satisfaction in couples becoming parents (e.g., Mitnick et al., 2009) seems to start already in pregnancy. It seems contra intuitive, that couples report a decline in negative communication and at the same time a decrease in relationship satisfaction as negative communication has been shown to predicted faster rates of negative change in relationship satisfaction (Johnson et al., 2005; Woodin, 2011). However, if the decreases in negative communication represent an avoidance of burdening the partner but not a decrease in dyadic tensions, this result seems to be more plausible. Partners may focus more on themselves and

the upcoming birth, try to figure out their problems on their own and avoid topics potentially leading to conflict during the last weeks before birth. However, the null findings in stress, common and supportive DC and relationship self-regulation indicate that changes in pregnancy (e.g., decreased sexual intercourse, changes in appearance) do not affect couples on all areas; various skills, individual stress, and relationship satisfaction seem to remain stable during pregnancy.

Short-Term Intervention Effects

Regarding our second research question, we found a significant intervention effect in stress communication only. More specifically, slopes of stress communication of both intervention conditions increased while the slope of control condition decreased. The strengths of the effect did not differ between the two intervention conditions (i.e., CCC-P and movie). Thus, both interventions buffered the negative time effect on stress expression. Couples from both intervention groups got sensitized for the importance of stress communication and increased their expression of stress-related feelings. By doing so, couples in the intervention condition created a promising foundation for a successful process of dyadic coping in which the stress communication is followed by the partners' supportive behavior (Bodenmann, 2000). A reason for the null-findings in respect to other relationship skills might be that it might have been easier for couples to engage in stress communication compared to changing the more complex behaviors such as SR or behavior based on a deeper interaction with the partner (e.g., positive communication, common DC and supportive DC). Further, changing behavior requires energy and resources (Kanfer et al., 2012), resources which couples may use in other, subjectively more important, areas. The null effect of CCC-P on relationship satisfaction may highlight that relationship satisfaction reflects how satisfied partners are with different aspects of their relationship (Shafer, James, & Larson, 2016). To report a change in relationship satisfaction one needs first to notice a change in a subjectively

relevant aspect of the relationship (e.g., partners dyadic coping) which can only happen, when one self or the partner changed behavior. This process can take quite a while and might be an explanation for the null finding in relationship satisfaction. The same explanation may be true for the null finding in individual well-being as it includes an evaluation of various aspects of life (Proulx et al., 2007).

Summing up, findings regarding time effects indicate that changes happen in the last trimester of pregnancy but they may not be as challenging to couples as in the time after birth (Halford et al., 2015). The single short-term effect of RE on stress communication may provide support for the assumption, that pregnancy is a window of opportunity for RE (Petch et al., 2012b), as couples seem to have enough resources to uptake useful information and learn skills to protect their relationship against harmful factors emerging after birth.

Strengths, Limitations and Future Directions

This study has several strengths that underline the importance of this study. First, we examined extensively effects of pregnancy not only on stress, but also relationship skills and relationship satisfaction. Second, to the best of our knowledge, CCC-P is the first RE program for couples transitioning to parenthood combining dyadic coping with other relevant skills like communication and self-regulation in relationships, shared realistic expectations and parenting. Third, by focusing on short-term effects before birth, we were able to see if RE causes differences between the conditions without having the additional impact of delivery. This gives the later opportunity to compare RE effects before and after birth. Additionally, we compared two different forms of RE within one study which allows to further optimize different forms of RE.

The biggest limitation of this study is its short duration. We are aware, that the persistence of short-term effects and potential long-term effects are crucial in the field of

prevention. Nevertheless, we think it is important to see if there are short-term effects of RE before birth, as many additional things change in couples' life after birth (Halford et al., 2015). Secondly, couples were only quasi-randomly assigned to the different conditions. However, target variables did not differ significantly across the three conditions at T1. Third, the current study is based on self-reported data only, which can be biased. Including the partners' perspective or behavioral data would provide more powerful data.

From a preventive perspective future studies should replicate the findings regarding effects of time during pregnancy on stress, relationship skills and relationship satisfaction. Additionally, further studies should investigate whether self-directed and face-to-face interventions cause similar effects on a long-term perspective as past studies have shown that RE effects are sometimes found with a delayed onset (Hilpert, Bodenmann, Nussbeck, & Bradbury, 2014). Alternatively, combining the more traditional format with the self-directed format might be promising, as in the current study the self-directed intervention led to more effects compared to the face-to-face intervention

Conclusion

We contribute to the sparse knowledge about effects of pregnancy on couples by showing time effects during the last trimester of pregnancy. Past research has shown that RE caused best effects when lasting 9-20 hours (Hawkins et al., 2008). Although our interventions took less time, they produced reasonable effects. This is impressive as the phase of pregnancy is known to be quite stressful (Doss, Rhoades, Stanley, & Markman, 2009b) and couples though might use their resources for other things. Therefore, our short-term effects are promising and we are cautiously optimistic regarding potential long-term effects.

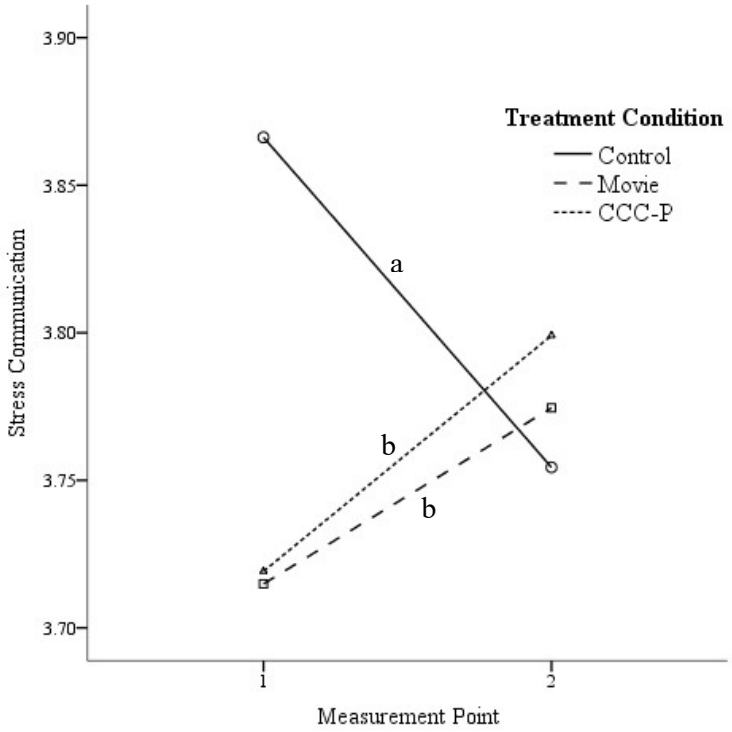

Figure 7. Short-term Intervention Effects in Stress Communication.

Note. Indices next to the lines indicate significant differences between the treatment conditions in the development from T1 to T2 (different indices indicate differences, same indices indicate no difference).

Table 7. *Mean and Standard Deviations of All Study Variables (N = 307)*

	M (*SD*)					
	Control		Movie		Workshop	
	T1	T2	T1	T2	T1	T2
Men						
stress	1.66 (0.45)	1.64 (0.47)	1.70 (0.43)	1.74 (0.46)	1.72 (0.47)	1.74 (0.46)
stress communication	3.50 (0.72)	3.39 (0.69)	3.40 (0.61)	3.46 (0.65)	3.28 (0.62)	3.43 (0.66)
supportive DC	4.11 (0.53)	4.07 (0.55)	4.04 (0.48)	4.12 (0.45)	4.08 (0.50)	3.99 (0.49)
common DC	3.60 (0.52)	3.61 (0.58)	3.63 (0.59)	3.68 (0.64)	3.56 (0.55)	3.54 (0.51)
positive communication	4.30 (0.78)	4.35 (0.77)	4.21 (0.76)	4.20 (0.68)	4.22 (0.66)	4.25 (0.71)
negative communication	1.96 (0.44)	1.79 (0.38)	1.83 (0.41)	1.77 (0.38)	1.99 (0.41)	1.90 (0.38)
self-regulation strategies	4.37 (0.69)	4.44 (0.66)	4.30 (0.62)	4.34 (0.69)	4.46 (0.61)	4.47 (0.60)
self-regulation efforts	2.85 (0.92)	2.82 (0.89)	2.94 (0.86)	2.83 (0.89)	2.87 (0.80)	2.88 (0.85)
relationship satisfaction	18.42 (1.95)	17.70 (2.29)	17.60 (2.31)	17.28 (2.60)	17.73 (2.33)	17.12 (2.69)
Women						
stress	1.86 (0.47)	1.97 (0.44	1.99 (0.54)	1.90 (0.49)	1.90 (0.49)	1.91 (0.44)
stress communication	4.23 (0.64)	4.12 (0.62)	4.03 (0.72)	4.09 (0.56)	4.16 (0.64)	4.17 (0.67)
supportive DC	4.19 (0.53)	4.16 (0.49)	4.13 (0.52)	4.17 (0.49)	4.12 (0.52)	4.11 (0.53
common DC	3.61 (0.67)	3.58 (0.60)	3.60 (0.71)	3.58 (0.64)	3.53 (0.69)	3.54 (0.73)
positive communication	4.54 (0.76)	4.61 (0.69)	4.52 (0.73)	4.56 (0.62)	4.62 (0.69)	4.62 (0.64)
negative communication	2.11 (0.46)	1.99 (0.45)	2.12 (0.47)	2.00 (0.43)	2.11 (0.51)	1.99 (0.48)
self-regulation strategies	4.55 (0.64)	4.56 (0.67)	4.50 (0.63)	4.50 (0.58)	4.60 (0.66)	4.55 (0.61)
self-regulation efforts	2.62 (0.80)	2.46 (0.77)	2.84 (0.86)	2.82 (0.91)	2.70 (0.76)	2.75 (0.79)
relationship satisfaction	18.07 (2.16)	17.93 (2.41)	18.09 (2.53)	17.60 (2.64)	18.02 (2.44)	18.18 (2.53)

Table 8. *Results of ANOVAs Testing Time Effects and Short-Term Intervention Effects (N = 307)*

	Model 1						Model 2					
	df_1	df_2	F	p	$p_{Šidák}$	η^2	df_1	df_2	F	p	$p_{Šidák}$	η^2
Stress												
time	1	74	1.52	.222	.896	.02	1	245	0.32	.572	1.000	.00
treatment	–	–	–	–	–	–	2	245	0.58	.560	.999	.01
gender	**1**	**74**	**27.80**	**<.001**	**<.001**	**.27**	**1**	**245**	**43.61**	**<.001**	**<.001**	**.15**
time × treatment	–	–	–	–	–	–	2	245	1.02	.362	.982	.01
time × gender	1	74	3.48	.066	.459	.05	1	245	0.01	.915	1.00	.00
gender × group	–	–	–	–	–	–	2	245	0.60	.548	.999	.01
time × treatment × gender	–	–	–	–	–	–	2	245	3.36	.036	.281	.03
Stress communication												
time	**1**	**75**	**8.39**	**.005**	**.044**	**.10**	1	241	0.14	.707	1.00	.00
treatment	–	–	–	–	–	–	2	241	0.53	.591	1.00	.00
gender	**1**	75	**52.16**	**<.001**	**<.001**	**.41**	**1**	**241**	**192.24**	**<.001**	**<.001**	**.44**
time × treatment	–	–	–	–	–	–	**2**	**241**	**5.91**	**.003**	**.027**	**.05**
time × gender	1	75	0.00	.979	1.00	.00	1	241	0.98	.322	.970	.00
gender × group	–	–	–	–	–	–	2	241	1.14	.322	.970	.01
time × treatment × gender	–	–	–	–	–	–	2	241	0.72	.488	.998	.01
Supportive DC												
time	1	75	0.84	.363	.983	.01	1	240	0.14	.713	1.00	.00
treatment	–	–	–	–	–	–	2	240	0.56	.573	1.00	.01
gender	1	75	1.55	.216	.888	.02	1	240	4.77	.030	.240	.02
time × treatment	–	–	–	–	–	–	2	240	3.42	.034	.268	.03
time × gender	1	75	0.04	.849	1.00	.00	1	240	0.26	.612	1.00	.00
gender × group	–	–	–	–	–	–	2	240	0.01	.987	1.00	.00
time × treatment × gender	–	–	–	–	–	–	2	240	0.62	.539	.999	.01
Common DC												
time	1	75	0.12	.733	1.00	.00	1	241	0.00	.966	1.00	.00
treatment	–	–	–	–	–	–	2	241	0.56	.570	.999	.01
gender	1	75	0.02	.896	1.00	.00	1	241	0.60	.438	.994	.00
time × treatment	–	–	–	–	–	–	2	241	0.12	.891	1.00	.00
time × gender	1	75	0.48	.491	.998	.01	1	241	0.31	.577	1.00	.00
gender × group	–	–	–	–	–	–	2	241	0.26	.774	1.00	.00
time × treatment × gender	–	–	–	–	–	–	2	241	0.34	.713	1.00	.00
Positive Communication												
time	1	74	2.62	.110	.650	.03	1	245	0.91	.341	.977	.00
treatment	–	–	–	–	–	–	2	245	0.49	.612	1.00	.00
gender	1	74	6.69	.012	.100	.08	**1**	**245**	**42.17**	**<.001**	**<.001**	**.15**

	Model 1						Model 2					
	df_1	df_2	F	p	$p_{Šidàk}$	η^2	df_1	df_2	F	p	$p_{Šidàk}$	η^2
time × treatment	–	–	–	–	–	–	2	245	0.69	.503	.998	.01
time × gender	1	74	0.02	.881	1.00	.00	1	245	0.31	.577	1.00	.00
gender × group	–	–	–	–	–	–	2	245	0.75	.476	.997	.01
time × treatment × gender	–	–	–	–	–	–	2	245	0.07	.929	1.00	.00
Negative Communication												
time	**1**	**74**	**38.40**	**<.001**	**<.001**	**.34**	**1**	**245**	**63.07**	**<.001**	**<.001**	**.21**
treatment	–	–	–	–	–	–	2	245	0.82	.440	.995	.01
gender	**1**	**74**	**10.78**	**.002**	**.014**	**.13**	**1**	**245**	**39.62**	**.000**	**<.001**	**.14**
time × treatment	–	–	–	–	–	–	2	245	0.98	.376	.986	.01
time × gender	1	74	0.78	.379	.986	.01	1	245	0.47	.492	.998	.00
gender × group	–	–	–	–	–	–	2	245	2.51	.083	.542	.02
time × treatment × gender	–	–	–	–	–	–	2	245	1.42	.244	.919	.01
Self-Regulation strategies												
time	1	73	1.03	.315	.967	.01	1	241	0.45	.501	.998	.00
treatment	–	–	–	–	–	–	2	241	1.36	.260	.933	.01
gender	1	73	2.58	.113	.660	.03	**1**	**241**	**8.55**	**.004**	**.035**	**.03**
time × treatment	–	–	–	–	–	–	2	241	0.52	.596	1.00	.00
time × gender	1	73	0.48	.491	.998	.01	1	241	1.48	.224	.898	.01
gender × group	–	–	–	–	–	–	2	241	0.19	.831	1.00	.00
time × treatment × gender	–	–	–	–	–	–	2	241	0.02	.981	1.00	.00
Self-Regulation efforts												
time	1	72	2.05	.157	.785	.03	1	240	1.48	.224	.898	.00
treatment	–	–	–	–	–	–	2	240	1.85	.159	.790	.02
gender	1	72	6.96	.010	.088	.09	1	240	6.73	.010	.086	.03
time × treatment	–	–	–	–	–	–	2	240	1.27	.283	.950	.01
time × gender	1	72	1.29	.259	.933	.02	1	240	0.00	.982	1.00	.00
gender × group	–	–	–	–	–	–	2	240	1.20	.305	.962	.01
time × treatment × gender	–	–	–	–	–	–	2	240	1.12	.327	.972	.01
Relationship Satisfaction												
time	**1**	**75**	**8.15**	**.006**	**.049**	**.10**	1	250	6.16	.014	.119	.02
treatment	–	–	–	–	–	–	2	250	1.38	.254	.928	.01
gender	1	75	0.04	.834	1.00	.00	1	250	6.17	.014	.119	.02
time × treatment	–	–	–	–	–	–	2	250	2.90	.057	.410	.02
time × gender	1	75	3.29	.074	.499	.04	1	250	1.97	.161	.794	.01
gender × group	–	–	–	–	–	–	2	250	2.48	.086	.555	.02
time × treatment × gender	–	–	–	–	–	–	2	250	1.48	.229	.904	.01

Note. In model 1, main effects of time in the control condition are tested (H1). In model 2, short-term intervention effects are tested (H2). Values which are significant after Šidàk correction are bold.

GENERAL DISCUSSION AND CONCLUSION

The principal goal of the present thesis was to add to the understanding of how couples' relationships are affected by the transition to parenthood (see Chapter 1). The objective of this thesis was twofold: First, to investigate the effect of the transition to parenthood on couples' stress, relationship skills (i.e., communication, dyadic coping (DC), and relationship self-regulation (SR)) and relationship satisfaction, while considering the fact that becoming parents has been shown to be challenging for many couples (Halford et al., 2015) due to various changes in couples lives (Claxton & Perry-Jenkins, 2008; Medina et al., 2009). Second, this thesis aimed to examine effects of relationship education (RE) on couples becoming parents, as couples transitioning to parenthood are at elevated risk for relationship dissatisfaction (Cowan & Cowan, 2014) and consequences of low relationship are manifold.

9. Summary of Findings

9.1 Summary of Study I

This study evaluated the effects of CCP (an existing RE program) on communication, and tested whether changes in communication mediate the effects of RE on relationship satisfaction. In line with previous research (Halford et al., 2001; Williamson et al., 2015) couples' communication became more negative and less positive across the transition to parenthood (i.e., from 3 months before to 28 months after birth) in the control condition. CCP attenuated deterioration in communication across time for some behaviors, on invalidation, conflict and discuss for men, and on validation for women. However, risk did not moderate the effects of CCP on communication.

When testing the mediation-hypothesis, we focused on high risk couples as they are the ones expected to improve problematic communication, and to benefit most from the RE.

High-risk couples' changes in communication from pre-RE to post-RE did not predict the trajectory of couples' relationship satisfaction, which contradicts proposed the moderated mediation hypothesis by Halford and Bodenmann (2013).

However, lack of mediation does not mean that communication skills training is irrelevant and should be dropped from RE. Participants completing RE consistently rate communication as the most important part of RE (Petch et al., 2012; Stanley, 2001). The positive expectations of communication enhancement might in itself enhance couple satisfaction, even if the specific changes in communication behaviors do not mediate change in satisfaction. Alternatively, if couples use communication training during RE to negotiate change successfully (e.g. more equitable sharing of parenting or household chores), that might produce an effect on couple satisfaction even if the communication behavior changes after RE do not mediate long-term relationship satisfaction. Finally, the lack of clear demonstration of the mediators of RE effects needs to be considered in the context of research on mediators of effective psychological interventions more generally. Kazdin (2008) notes that across the whole field of clinical psychology, the mediators of efficacious psychological interventions have proven difficult to establish.

9.2 Summary of Study II

While investigating time effects during the transition to parenthood (i.e. 3months before birth to 10 months after birth) on stress, communication, DC, SR and relationship satisfaction, we found stress to increase from the last trimester of pregnancy to 40 weeks after birth. In communication, common DC and supportive DC revealed to decrease across the transition to parenthood. This is deleterious, as among different forms of DC, common DC and supportive DC have been shown to be very strong predictors of relationship satisfaction (Falconier et al., 2015). However, negative DC and negative communication did not increase significantly during this time. In contrast, SR strategies –the work one invests in order to maintain and

improve one's own relationship–, decreased, indicating that couples becoming parents might not have enough resources to change behavior. Replicating previous findings (Doss, Rhoades, Stanley, & Markman, 2009a; Mitnick et al., 2009), relationship satisfaction decreased massively during the transition to parenthood.

We then examined the association between stress, DC, SR and communication and relationship satisfaction within the same points of measurements during the transition to parenthood. One's own and partner's stress was associated with relationship satisfaction. Beside SE efforts, all positive aspects of DC, SR and communication were associated with one's own relationship satisfaction. In six out of the eight examined subscales women's relationship satisfaction was associated with their partner's relationship skills, while men's relationship satisfaction was associated with their partner's relationship skills in only three out of eight subscales. However, these partner effects highlight the dependencies between partners. When examining stress and all relationship skills (i.e., DC, SR and communication) at the same time, DC revealed to be most strongly associated with relationship satisfaction compared to the other variables.

9.3 Summary of Study III

In this study, we investigated the temporal course of stress, relationship skills (i.e., communication, DC and SR) and relationship satisfaction in the last trimester of pregnancy. Results revealed that stress communication and negative communication decline during the last trimester of pregnancy. One explanation for decreases in stress communication and negative communication might be that the upcoming joyful event of birth causes a more positive atmosphere and therefore results in less negative communication and less communication about individual stress. Another explanation might be that in the last week of pregnancy, partners avoid burdening each other, which results in less stress communication and negative communication. We further found a decline in relationship satisfaction during

the last trimester of pregnancy. Thus, the widely replicated decline in relationship satisfaction in couples becoming parents (e.g., Mitnick et al., 2009) seems to start already in pregnancy. It seems counterintuitive, that couples report a decline in negative communication and at the same time a decrease in relationship satisfaction as negative communication has been shown to predicted negative change in relationship satisfaction (Johnson et al., 2005; Woodin, 2011). However, if the decrease in negative communication represents an avoidance of burdening the partner but not a decrease in dyadic tensions, this result seems to be more plausible. Partners may focus more on themselves and the upcoming birth, try to figure out their problems on their own and avoid topics potentially leading to conflict during the last weeks before birth.

Study 3 further investigated short-term effects of CCC-P, a new face to face RE program, and a web-based self-directed movie tailored to couples transitioning to parenthood. Compared to the control condition, CCC-P, led to a short-term effect (i.e., intervention effects before birth) in stress communication. More specifically, both forms of interventions buffered the negative time effect on stress expression. As there was no difference between the conditions (i.e., CCC-P and movie), couples from both intervention groups got sensitized for the importance of stress communication and increased their expression of stress-related feelings. By doing so, couples in the intervention condition created a promising foundation for a successful process of dyadic coping in which the stress communication is followed by the partners' supportive behavior (Bodenmann, 2000).

9.4 General Conclusion

Figure 8 illustrates conceptually, what has been examined by Studies I-III. In summary, results of the empirical contributions described in the current thesis provide further knowledge about couples transitioning to parenthood and the interplay between relevant constructs. Findings from the Studies I-III, draw to the following conclusions:

1. Changes happen already before birth, as negative communication, stress communication and relationship satisfaction deteriorate in the last trimester of pregnancy (Study III).
2. The transition to parenthood does not only affect individual stress negatively, but also different relationship skills (i.e., communication, DC, and SR) and relationship satisfaction (Study II).
3. Stress and relationship skills are associated with one's own and partners' relationship satisfaction during the transition to parenthood highlighting partners' interdependencies and the importance of relationship skills (Study II).
4. CCP (an established RE program) during transition to parenthood attenuates some of the deterioration of couple communication across the transition to parenthood (Study I).
5. Risk does not moderate the effects of CCP on communication (Study I).
6. High-risk couples' changes in communication from pre-RE to post-RE do not predict the trajectory of couples' satisfaction (Study I).
7. CCCP (a new RE program for couples transitioning to parenthood) can buffer the negative time effect on stress expression already before birth (Study III).

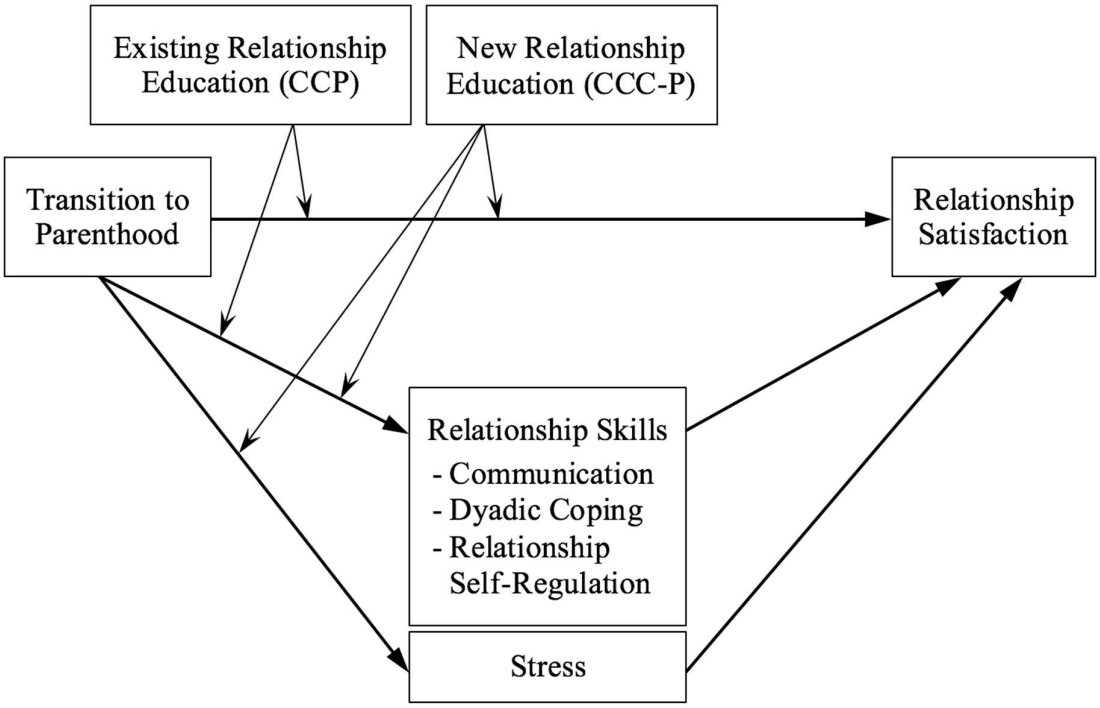

Figure 8: Conceptual Framework of the Empirical Contributions

10. Limitations and Implications for Future Research

Several limitations may have influenced the results of our research. As many of them have already been addressed in the respective discussion sections in Chapters 6 to 8, solely the caveats spanning across all empirical studies will be further reviewed and linked to future research avenues in this section.

Context might well moderate the effects of RE for new parents and generalizability of the current findings to other contexts therefore needs to be further evaluated. All participating couples tended to be well educated and prosperous. In both countries (Australia and Switzerland) paid maternity leave is mostly available to every woman transitioning to parenthood and rates of antenatal care are increasing. In this context, recruiting couples for RE before birth, and engaging them after birth was feasible. In contrast, some recent trials of RE in the US were with low income couples, who most often did not access antenatal care, had little or no access to paid maternity leave, and who were recruited after the birth and showed high rates of attrition from the RE (e.g., Wood et al., 2014). Perhaps RE can only work in contexts where social policy provides certain basic levels of support for new parent couples like easy access to antenatal care and maternity leave. Only one (see study I in Chapter 6) out of three studies has included observational data. Observational data is believed to be more objective compared to self-report measures. In addition, observational data has been shown to reveal larger RE effect sizes (on communication) than self-report measures (Pinquart & Teubert, 2010).

Couples becoming parents are at risk to develop relationship dissatisfaction (Cowan & Cowan, 2000), which has been shown to have manifold consequences (see Chapter 1.3). As different changes can emerge before and after birth (Cowan & Cowan, 2000) and RE has been shown to yield stronger effects when also taking place prior birth (Pinquart & Teubert, 2010),

more research should be done about pregnancy and its effects on couples' functioning. Study III in this thesis is a first step into this direction. In the field of RE, different aspects should be further investigated. First, future research needs to control for the role of non-specific effects of RE, to assess change in couple communication with methods less influenced by demand characteristics. Second, multi-component RE programs might enhance couple satisfaction by changing risk profiles across multiple risk factors, with the effect of any particular risk factor averaged across couples being modest. Third, future research should seek to assess changes in couples' risk profiles to establish if such changes might mediate RE effects. In assessing mediators, it is important to focus upon mediators likely to be modified by RE (e.g., DC, couple communication, relationship expectations), rather than upon risk factors that are unlikely to change as a result of RE (e.g. relationship history, social disadvantage). Fourth, many couples who might benefit from RE do not participate due to reasons like fear of self-disclosure in group settings, restrictions regarding money and time and limited child care possibilities (Halford et al., 2004). As many of these reasons apply to couples becoming parents, future research should investigate whether self-directed and face-to-face interventions cause similar effects on a long-term perspective. First results described in Study III suggest that both forms can have beneficial effects. And fifth, more research is needed investigating child outcomes in couple-focused intervention as children's well-being is strongly associated with couples functioning (see Cummings & Davies, 2010 for an overview).

11. Implications for professional practice

The overwhelming positive reaction to the Swiss project (on which Study II and Study III are based on) of media, family-related companies, hospitals, midwives, doctors and other professionals, their willingness to support the project and the relative easiness to find willing couples becoming parents to participate in a longitudinal study indicates the enormous general interest in the topic of the transition to parenthood. Thus, it is important to not only discuss the scientific implications but also the practical ones.

When working with couples becoming parents, professionals should bear in mind that the transition to parenthood is not only an event of joy and happiness (Gottman & Notarius, 2000) but can also be quite challenging as different changes emerge (Halford et al., 2015). As it has been shown that already pregnancy can have an impact on relationship functioning it seems plausible to intervene prior to birth. Couples becoming parents should be motivated to look into the transition to parenthood and its associated changes. This may help them develop shared realistic expectations about parenthood and prevent later disappointments. In addition, engaging in RE during pregnancy might help couples develop and strengthen relationship skills in order to master upcoming challenges. This seems to be even more important for couples at high-risk, as certain risk-factors (e.g., unplanned pregnancy, low relationship satisfaction prior birth, mental health problem in the past) have been revealed to more likely lead to relationship dissatisfaction. Professionals and paraprofessionals working with individuals or couples should assess these factors (or refer the couples to an adequate place) and try to sensitize couples for the importance of relationship functioning not only for their own well-being, but also for the development of their unborn child. The impact of relationship satisfaction on children was the strongest motivator for couples to participate in our Swiss project. If couples missed out on the window of opportunity for RE during pregnancy, they

can still strengthen their relationship through RE. RE has been shown to also yield positive effects after birth, although smaller than RE combining interventions before and after birth.

In order to provide useful information to couples becoming parents, professionals need sufficient knowledge about the transition to parenthood and its consequences. Thus, professionals should get sufficient information and training in this field. Currently, the German Association of Midwifes, and a group of Swiss midwives are creating such a training, to sensitize trainees for the dyadic perspective of the transition to parenthood and the possibilities to strengthen couples. Trainees will not only be educated in counselling skills but also receive a convenient book including information based on this thesis (Anderegg & Bodenmann, in press) to deepen their scientific knowledge.

Inconvenient factors like fear of self-disclosure in group settings, restrictions regarding money and time and limited child care possibilities are the reasons why many couples who might benefit from RE do not participate (Halford et al., 2004). Thus, to provide information about relevant relationship variables in a very simple language in easily accessible forms (e.g., homepages, infotainment movies, and newsletters) would help to reach a larger population and to disseminate prevention. This would create a win-win situation for all involved parties. One example would be if a company selling baby-food or caring products additionally provided customer-relevant scientific knowledge (e.g., how to create best environment for baby's development) in the form of entertaining movies on their webpage. By doing so, customers would not have to look up important information and avoid tedious research. The company on the other hand, increases reputation as they fulfill additional needs of their clients. The same is obviously true for online and offline media, which may even have a larger scope and more people would benefit from this relevant information.

Several factors such as stress (see Study II in Chapter 7), reduced time as a couple (Claxton & Perry-Jenkins, 2008) and shift toward more traditional roles between partners

(Bianchi et al., 2000) have been shown to be harmful for relationships. Providing conditions for flexible working hours in accordance to family needs for both, women and men, and general greater ‘time sovereignty’ of employees would be one important step towards helping couples ‘doing (family) time’ during the week (Jurczyk, 2009). Additionally, policy makers could provide certain basic levels of support for new parent couples like easy access to antenatal care, flexible maternity leave, part-time jobs for both genders or funding for RE.

12. Closing Remark

The transition to parenthood is one of the most challenging events in adulthood (Kluwer, 2010) and brings many obstacles on different levels (Halford et al., 2015). It is no surprise, that because of these challenges, many couples experience a decline in relationship satisfaction (Doss, Rhoades, Stanley, & Markman, 2009a). Low relationship satisfaction has been shown to have numerous negative consequences (see Chapter 1.3). Thus, a number of relationship education programs provide key knowledge and skills to better manage the transition (Cowan & Cowan, 2014). Even though programs lead generally to small effect sizes (Pinquart & Teubert, 2010), research seems to be on a good track to find relevant variables to refine RE focusing on couples becoming parents. This leads to the closing remark: Transition to parenthood may be challenging for couples but also a chance to learn more about themselves and to strengthen their relationship.

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13. Curriculum Vitae

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Education

2013 – present	**PhD student of Psychology** *University of Zurich*
2013 – present	**Advanced training to become a federally licensed psychotherapist** *Academy for behavioural therapy and integrative methods*
2009 – 2012	**Master of Science in Psychology**

Research Experience

2013	**Mentorship** *School of Psychology, University of Brisbane, Australia*
2009 – 2013	**Research Assistant** *Clinical Psychology for Children/Adolescents and Couples/Families, University of Zurich*

Professional Experience

2016 – present	**Psychological Counsellor** *Own practice (www.psychologie-anderegg.ch)*
2016 - present	**Coach for Stressfit®** *University of Zurich*
2013 - present	**Clinical Psychologist** *Regional Hospital Affoltern am Albis*
2012 - present	**Coach for Couples Coping Enhancement Training (CCET/Paarlife®)** *University of Zurich*

Teaching Experience

2014	Couple therapy: Background and Practice (Graduate Course, University of Zurich)
2014	Experimental Psychology (Undergraduate Course, University of Zurich)
2009	Tutor: Psychological Methods: Data collection, analysis and presentation (Undergraduate Course, University of Zurich)
2009	Tutor: Forms and methods of scientific working (Undergraduate Course, University of Zurich)

Publications

Anderegg, V. & Bodenmann G. (accepted). Partnerschaft und Stress im Uebergang zur Elternschaft [Relationship and Stress During the Transition to Parenthood]. In L. Spaetling (Eds.) *Geburts- und Familienvorbereitung*. Frankfurt am Main: MabuseVerlag.

Sager-Sokolic, N., Anderegg, V., & Plattner-Gerber, B. (2016). Eltern werden [Becoming Parents]. Extrabriefe – *Pro Juventute*, 5-30.

Hilpert, P, Kuhn, R., Anderegg, V., & Bodenmann, G. (2015). Comparing Simultaneously the Effects of Extra-Dyadic and Intra-Dyadic Experiences on Relationship Outcomes. *Family Science, 6*(1), 129-142. doi: 10.1080/19424620.2015.1082018

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Presentations

Anderegg, V., Bodenmann, G., Halford, K. W., Schmid, H., Nieuwenboom, W., & Benz, C. (2016). *Becoming Happy Parents: Short-Term Effects of Intervention for Couples During Transition to Parenthood.* Paper presented at the Conference of the International Association for Relationship Research, July 20th – 24th, Toronto / Canada.

Anderegg, V. (2016). *Stressmanagement für Eltern.* [Stressmanagement for Parents] Paper presented at the Cantonal Parent education conference (Kantonaler Elternbildungstag) of the office for adolescents and (Amt für Jugend und Berufsberatung), March 12th, Winterthur / Switzerland.

Anderegg, V., Bodenmann, G., & Halford, K. W. (2015). *The Challenge of Becoming Parents.* Paper presented at the 3rd Annual Scientific Conference of the European Association of Psychosomatic Medicine (EAPM) on "Challenges and Chances for Psychosomatic Medicine in Health Care", July 1st – 4th, Nuremberg / Germany.

Anderegg, V., Bodenmann, G., Halford, K. W., Schmid, H., Nieuwenboom, W., & Benz, C. (2015). *The Challenge of Becoming Parents: How Relationship Satisfaction is Affected by Having a Baby.* Poster presented at the 45th Annual EABCT Congress CBT on "A Road to Hope and Compassion for People in Conflict", August 31st – September 4th, Jerusalem / Israel.

Anderegg, V., Bodenmann, G., & Halford, K. W. (2014). *Strengthening Couples During Transition to Parenthood.* Paper presented at the Conference of the International Association for Relationship Research, July 10th – 13th, Melbourne / Australia.